STIC Search Report
EIC 3700

USPTO

STIC Database Tracking Number: 135079

TO: Kim Lewis
Location: pk1 11d44
Art Unit: 3743
Friday, October 15, 2004

Case Serial Number: 10/757014

From: Emory Damron
Location: EIC 3700
CP2-2C08
Phone: 305-8587

Emory.Damron@uspto.gov

Search Notes

Dear Kim,

Please find below an inventor search in the bibliographic and full-text foreign patent files, as well as keyword searches in the patent and non-patent literature files, both bibliographic and full text.
References of potential pertinence have been tagged, but please review all the packets in case you like something I didn't.
Of those references which have been tagged, please note any manual highlighting which I've done within the document.
In addition to searching on Dialog, I also searched Google.com, EPO/JPO/Derwent, and Scirus/ScienceDirect.
The bulk of the most relevant art is in the patent literature packets.
Please contact me if I can refocus or expand any aspect of this case, and please take a moment to provide any feedback (on the form provided) so EIC 3700 may better serve your needs. Good Luck!

Sincerely,

Emory Damron
Technical Information Specialist
EIC 3700, US Patent & Trademark Office
Phone: (703) 305-8587/ Fax: (703) 306-5915
Emory.damron@uspto.gov

sira
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STIC Search Results Feedback Form

EIC 3700

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact:***

John Sims, EIC 3700 Team Leader
308-4836, CP2-2C08

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* 3743 *Example: 3730*
- *Relevant prior art **found**, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

  Types of relevant prior art found:
  - ☐ Foreign Patent(s)
  - ☐ Non-Patent Literature
    (journal articles, conference proceedings, new product announcements etc.)
- *Relevant prior art **not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to STIC/EIC3700 CP2 2C08

Access DB# 135079

SEARCH REQUEST FORM

Scientific and Technical Information Center Rush

equester's Full Name: Kim Lewis Examiner #: 72930 Date: 10/14/04
t Unit: 3743 Phone Number 30 8-1191 Serial Number: 10/357,014
ail Box and Bldg/Room Location: CPK-11 5E19 Results Format Preferred (circle): PAPER DISK E-MAIL

more than one search is submitted, please prioritize searches in order of need.

****

lease provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. nclude the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or tility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if nown. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Scab Protecting Bandage

Inventors (please provide full names): Ed (Edward) Schlussel

Earliest Priority Filing Date: 10/22/02

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please search net databases
Tag and highlight elastomers
For the subject matter to search, please read the
attached claims. Specifically needed is the claimed
porosity.

RUSH

****

STAFF USE ONLY

Searcher: Emory Damron
Searcher Phone #: 305 8587
Searcher Location: CP2 2 C8
Date Searcher Picked Up: 10/14/04 3pm
Date Completed: 10/15/04 4pm
Searcher Prep & Review Time: 260m
Clerical Prep Time: 0
Online Time: 260m

Type of Search

NA Sequence (#)
AA Sequence (#)
Structure (#)
Bibliographic X
Litigation
Fulltext X
Patent Family
Other

Vendors and cost where applicable

STN
Dialog X 1232.15
Questel/Orbit
Dr.Link
Lexis/Nexis
Sequence Systems
WWW/Internet X
Other (specify)

PTO-1590 (8-01)

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S2           0    (ED OR EDDIE? OR EDDY OR EDWARD OR TED OR TEDDY)(2N)SCHLUS-
              SEL
S3      663637    BANDAG? OR COMPRESS? OR DRESSING? OR POULTIC? OR NAPKIN? OR
                  BANDAID? OR BAND()(AID OR AIDS)
S4     1032100    IC=(A61F? OR D04H? OR A61K? OR A61L? OR B32B? OR B26F?)
S5           0    S1:S2 AND S3:S4
S6           1    S5 OR S1
? show files
File 347:JAPIO Nov 1976-2004/Jun(Updated 041004)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200465
         (c) 2004  Thomson Derwent
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6/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011969461
WPI Acc No: 1998-386371/199833
XRAM Acc No: C98-116738

Warp knitted loop fabric net for a biological matrix - comprises a first and second thread group the first forming warp chains knitted by a front bar, the second guided by a second bar forming lay ins under underlaps of the first in every warp chain course.

Patent Assignee: SCHLUSSEL E (SCHL-I)
Inventor: **SCHLUSSEL E**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5771716	A	19980630	US 95529424	A	19950918	199833	B

Priority Applications (No Type Date): US 95529424 A 19950918
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5771716	A		6	D04B-021/14	

Inventor: **SCHLUSSEL E**

US005771716A

United States Patent [19]

Schlussel

[11] Patent Number: 5,771,716

[45] Date of Patent: Jun. 30, 1998

[54] **WARP-KNITTED LOOP NET FABRIC**

[76] Inventor: **Edward Schlussel**, 333 Longwood Crossing, Lawrence, N.Y. 11559

[21] Appl. No.: **529,424**

[22] Filed: **Sep. 18, 1995**

[51] **Int. Cl.**[6] **D04B 21/14**; D04B 21/10

[52] **U.S. Cl.** **66/195**; 66/193

[58] **Field of Search** 66/191, 192, 193, 66/194, 195

[56] **References Cited**

U.S. PATENT DOCUMENTS

1,187,158	6/1916	McGinley	66/195
2,213,720	9/1940	Seim	66/193 X
3,084,529	4/1963	Scheibe	66/193
3,118,294	1/1964	Laethem	66/193
3,183,685	5/1965	Riehl	66/193
3,258,941	7/1966	Formenti	66/193
3,314,251	4/1967	Bünger	66/193

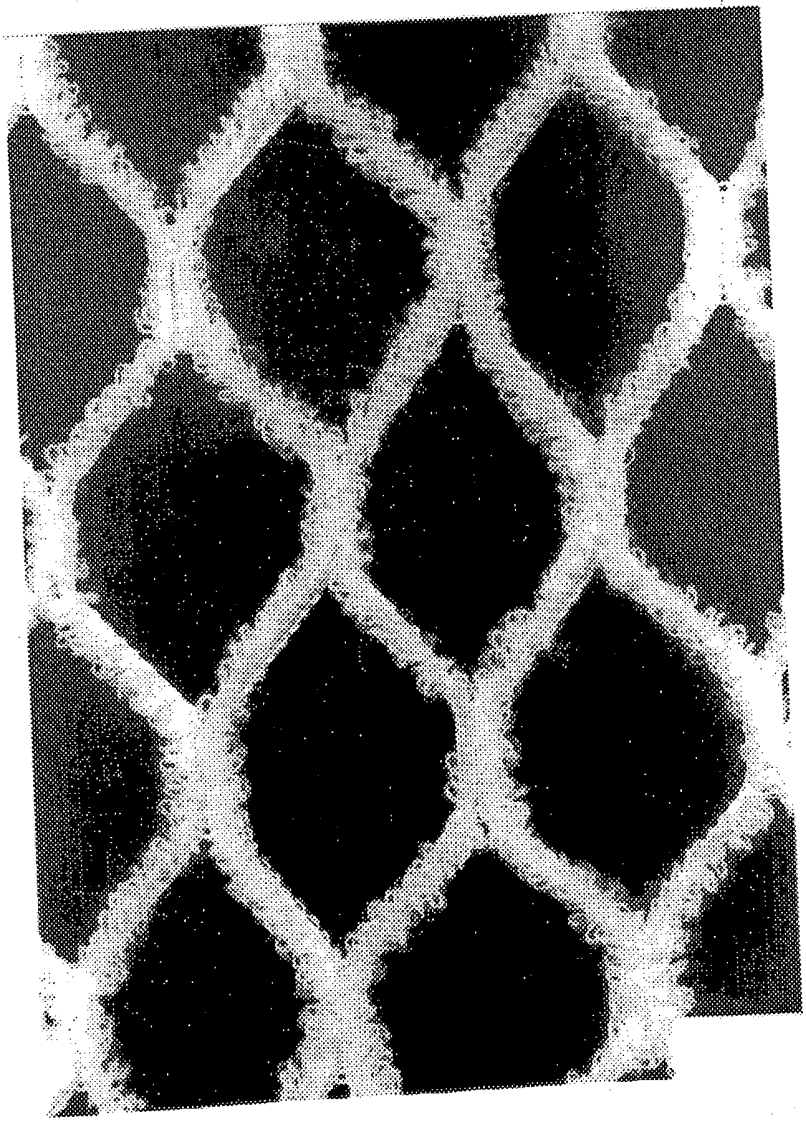
Primary Examiner—John J. Calvert

Attorney, Agent, or Firm—Brumbaugh, Graves, Donohue & Raymond

[57] **ABSTRACT**

A warp-knitted loop net fabric comprises a first group of threads forming warp chains knitted by a front bar, a second group of threads guided by a second bar and forming lay-ins under underlaps of the first group of threads in every course of the warp chains, the underlaps of the warp chains of the first group of threads being loops formed by tensioning the threads of the second group, and a knitted net forming a groundwork incorporating the warp chains and lay-ins.

7 Claims, 3 Drawing Sheets



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S2           2   (ED OR EDDIE? OR EDDY OR EDWARD OR TED OR TEDDY)(2N)SCHLUS-
                 SEL
S3      347183   BANDAG? OR COMPRESS? OR DRESSING? OR POULTIC? OR NAPKIN? OR
                 BANDAID? OR BAND()(AID OR AIDS)
S4      320182   IC=(A61F? OR D04H? OR A61K? OR A61L? OR B32B? OR B26F?)
S5           0   S1:S2 AND S3:S4
S6           2   S5 OR S2
? show files
File 348:EUROPEAN PATENTS 1978-2004/Oct W01
         (c) 2004 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20041007,UT=20040930
         (c) 2004 WIPO/Univentio

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← & SIGNIFICANT HITS

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Set      Items   Description
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S2           0   (ED OR EDDIE? OR EDDY OR EDWARD OR TED OR TEDDY)(2N)SCHLUS-
                 SEL
S3     1200743   BANDAG? OR COMPRESS? OR DRESSING? OR POULTIC? OR NAPKIN? OR
                 BANDAID? OR BAND()(AID OR AIDS)
S4           0   S1:S2 AND S3
S5           9   S1 OR S4
S6           5   RD (unique items)
? show files
File   2:INSPEC 1969-2004/Oct W1
         (c) 2004 Institution of Electrical Engineers
File   5:Biosis Previews(R) 1969-2004/Oct W2
         (c) 2004 BIOSIS
File   6:NTIS 1964-2004/Oct W1
         (c) 2004 NTIS, Intl Cpyrght All Rights Res
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         (c) 2004 Elsevier Eng.  Info. Inc.
File  34:SciSearch(R) Cited Ref Sci 1990-2004/Oct W2
         (c) 2004 Inst for Sci Info
File  35:Dissertation Abs Online 1861-2004/Sep
         (c) 2004 ProQuest Info&Learning
File  65:Inside Conferences 1993-2004/Oct W2
         (c) 2004 BLDSC all rts. reserv.
File  67:World Textiles 1968-2004/Oct
         (c) 2004 Elsevier Science Ltd.
File  71:ELSEVIER BIOBASE 1994-2004/Oct W1
         (c) 2004  Elsevier Science B.V.
File  73:EMBASE 1974-2004/Oct W2
         (c) 2004 Elsevier Science B.V.
File  94:JICST-EPlus 1985-2004/Sep W2
         (c)2004 Japan Science and Tech Corp(JST)
File  95:TEME-Technology & Management 1989-2004/Jun W1
         (c) 2004 FIZ TECHNIK
File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Sep
         (c) 2004 The HW Wilson Co.
File 144:Pascal 1973-2004/Oct W1
         (c) 2004 INIST/CNRS
File 155:MEDLINE(R) 1951-2004/Oct W2
         (c) format only 2004 The Dialog Corp.
File 240:PAPERCHEM 1967-2004/Oct W2
         (c) 2004 Elsevier Eng. Info. Inc.
File 248:PIRA 1975-2004/Oct W1
         (c) 2004 Pira International
File 323:RAPRA Rubber & Plastics 1972-2004/Nov
         (c) 2004 RAPRA Technology Ltd
File 399:CA SEARCH(R) 1967-2004/UD=14116
         (c) 2004 American Chemical Society
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File 481:DELPHES Eur Bus 95-2004/Oct W1
         (c) 2004 ACFCI & Chambre CommInd Paris
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 The Gale Group
?
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6/3,K/4 **(Item 1 from file: 67)**
DIALOG(R)File 67:World Textiles

00226637 WORLD TEXTILE NO: 1969035 SUBFILE: EMDOCS
Warp-knitted loop net fabric
AUTHOR(S): **Schlussel E.**
Warp-knitted loop net fabric, (no pagination), 1998
DOCUMENT TYPE: Patent
RECORD TYPE: ABSTRACT
PATENT NO: USP 5 771 716
PATENT PUBLICATION DATE: 30 June
PRIORITY APPLICATION: 529424, 18 September 1995
LANGUAGES: ENGLISH

AUTHOR(S): **Schlussel E.**

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Set     Items   Description
S1          0   AU=(SCHLUSSEL E? OR SCHLUSSEL, E?)
S2          0   (ED OR EDDIE? OR EDDY OR EDWARD OR TED OR TEDDY)(2N)SCHLUS-
              SEL
S3     543174   BANDAG? OR COMPRESS? OR DRESSING? OR POULTIC? OR NAPKIN? OR
               BANDAID? OR BAND()(AID OR AIDS)

? show files
File   9:Business & Industry(R) Jul/1994-2004/Oct 14
         (c) 2004  The Gale Group
File  15:ABI/Inform(R) 1971-2004/Oct 14
         (c) 2004 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2004/Oct 15
         (c) 2004 The Gale Group
File  43:Health News Daily - Subs 1990-2004/Oct 14
         (c) 2004 F-D-C reports Inc.
File  47:Gale Group Magazine DB(TM) 1959-2004/Oct 15
         (c) 2004 The Gale group
File  98:General Sci Abs/Full-Text 1984-2004/Aug
         (c) 2004 The HW Wilson Co.
File 129:PHIND(Archival) 1980-2004/Oct W1
         (c) 2004 PJB Publications, Ltd.
File 130:PHIND(Daily & Current) 2004/Oct 14
         (c) 2004 PJB Publications,Ltd.
File 135:NewsRx Weekly Reports 1995-2004/Oct W2
         (c) 2004 NewsRx
File 148:Gale Group Trade & Industry DB 1976-2004/Oct 14
         (c)2004 The Gale Group
File 149:TGG Health&Wellness DB(SM) 1976-2004/Sep W3
         (c) 2004 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 369:New Scientist 1994-2004/Oct W1
         (c) 2004 Reed Business Information Ltd.
File 370:Science 1996-1999/Jul W3
         (c) 1999 AAAS
File 441:ESPICOM Pharm&Med DEVICE NEWS 2004/Oct W2
         (c) 2004 ESPICOM Bus.Intell.
File 444:New England Journal of Med. 1985-2004/Oct W2
         (c) 2004 Mass. Med. Soc.
File 621:Gale Group New Prod.Annou.(R) 1985-2004/Oct 15
         (c) 2004 The Gale Group
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Set      Items   Description
S1      374330   BANDAG? OR COMPRESS OR COMPRESSES OR NAPKIN? OR PAD OR PADS
              OR DRESSING? OR BANDAID? OR BAND()(AID OR AIDS)
S2      152921   SANITARY()WIPE? OR PATCH? OR POULTIC? OR POLTIC? OR WRAP? ?
              OR DIAPER? OR CUSHION?
S3      446966   SCAB? OR WOUND? OR LACERAT? OR ABRASION? OR LESION? OR ULC-
             ER? OR BLISTER? OR CHANCR? OR TRAUMA? OR INJUR?
S4     4320006   FABRIC? OR TEXTIL? OR MATERIAL? OR GAUZ? OR CLOTH OR CLOTHS
              OR MESH? OR TRICOT OR DOUBLE()NEEDL?()BAR
S5     1122844   KNIT? OR WOVEN? OR MOLD? OR MOULD? OR NETTING? OR WEFT? ? -
             OR WEAV? OR WARP? ?
S6      277576   POROS? OR POROUS? OR MICROPOROS? OR MICROPOROUS? OR POROSE?
              OR POROUSE? OR PORE?
S7      277960   PERFORAT? OR PERMEAB? OR FRAZIER? OR MVTR OR WVTR OR (MOIS-
             TUR? OR WATER?)()(VAPOR OR VAPOUR)()TRANSFER?()RATE?
S8      524763   DENSIT? OR DENIER? OR DECITEX? OR TEX OR PENNYWEIGHT? OR S-
             CRUPUL?
S9      245056   CU OR CUBIC? OR CUFT OR CUFEET OR CUFOOT OR SUP3 OR SUP()3
             OR "SUP.3" OR ".SUP.3" OR CUIN OR CUINCH?
S10     114691   FT OR FOOT OR FEET
S11     228202   CC OR CENTIMET? OR METER? OR METR?
S12     340379   MM OR MILLIMET? OR "IN." OR INCH? OR "FT." OR "MM." OR MMS
             OR "CC." OR CCS
S13    2449962   MIN OR MINUTE? OR SEC OR SECS OR SECOND?
S14     302546   SQ OR SQUARE? OR SQFT? OR SQFOOT? OR SQFOOT? OR SQFEET? OR
             SQIN? OR SQINCH? OR SUP2 OR SUP()2 OR "SUP.2" OR ".SUP.2"
S15          0   "FT./MIN./SQ.FT."
S16    1032100   IC=(A61F? OR A61K? OR A61L? OR B32B? OR B26F? OR D04H?)
S17     653675   S1:S2 OR (S3 AND S4:S5)
S18     163808   (S1:S2 OR S4:S5) AND S3
S19     653675   S17:S18
S20      70858   S19 AND S16
S21     653675   S19:S20
S22      34731   S21 AND S6:S7
S23       3078   S22 AND S8
S24      34731   S22:S23
S25        105   S24 AND S9 AND S10:S12 AND S13:S14
S26         78   S25 AND S6:S7(10N)(S1:S5 OR S8:S14)
S27        105   S25:S26
S28         35   S27 AND S16
S29        105   S27:S28
S30        105   IDPAT (sorted in duplicate/non-duplicate order
? show files
File 347:JAPIO Nov 1976-2004/Jun(Updated 041004)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200465
         (c) 2004  Thomson Derwent
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PAT LIT

BIBLIOGRAPHIC FILES

SELECTED EDITED HITS

[redacted]

30/3,K/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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LATE FILE DATE

016347941 **Image available**
WPI Acc No: 2004-506034/200448
XRAM Acc No: C04-187454
XRPX Acc No: N04-399758

Multi-functional absorbent article, i.e. personal care article, e.g. napkin for absorbing and retaining fluids, comprises substrate applied with first activated carbon coating

Patent Assignee: KIMBERLY-CLARK WORLDWIDE INC (KIMB)
Inventor: BORDERS R A; CHEN F; EDENS R L; GADSBY E D; LINDSAY J D; MANGUN C L; QUINCY R B; EDENS R; GADSBY E; LINDSAY J; MANGUN C; QUINCY R
Number of Countries: 106 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20040121681	A1	20040624	US 2002328729	A	20021223	200448 B
WO 200460414	A1	20040722	WO 2003US32849	A	20031017	200448

23 DEC 2002

Priority Applications (No Type Date): US 2002328729 A 20021223
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20040121681	A1		27	B32B-005/02	
WO 200460414	A1	E		A61L-015/22	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

Multi-functional absorbent article, i.e. personal care article, e.g. napkin for absorbing and retaining fluids, comprises substrate applied with first activated carbon coating

Abstract (Basic):

... a polymeric material and an activation agent heated to 100-300degreesC. The substrate has a **porosity** such that 20-500 ft3 **cubic feet** of air is capable of flowing through 1 ft2 of the substrate/ **minute** under a pressure differential of 125 Pascals.

... of forming a multi-functional absorbent article comprising providing a nonwoven fabric having first and **second** surfaces; applying a polymeric material and an activation agent to the first surface of the...

...that the nonwoven fabric is capable of performing multiple functions. The activated carbon coated nonwoven **fabric** has a **porosity** such that 20-500 ft3 of air is capable of flowing through 1 ft2 of the nonwoven fabric/ **minute** under a pressure differential of 125 Pascals ...

...The multi-functional absorbent article, e.g. personal care article, e.g. **napkin** is used for absorbing and retaining fluids...

...The figure illustrates a perspective view of a sanitary **napkin** .

...Title Terms: **NAPKIN** ;
International Patent Class (Main): **A61L-015/22** ...

... **B32B-005/02**
International Patent Class (Additional): **A61L-015/46** ...

... **B32B-005/22**

30/3,K/29 **(Item 29 from file: 350)**
DIALOG(R)File 350:Derwent WPIX

014577499 **Image available**
WPI Acc No: 2002-398203/200243
XRPX Acc No: N02-312346

Shin aim for use in sports e.g. soccer, has spring mat comprising of random loops of elastomer continuous filaments

Patent Assignee: TOYO KOGYO CO (TOYO)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2002017938	A	20020122	JP 2000245304	A	20000707	200243	B

22 JAN 2002 PUB DATE

Priority Applications (No Type Date): JP 2000245304 A 20000707
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2002017938	A		3	A63B-071/12	

Abstract (Basic):
... of elastomer continuous filaments. Each continuous filament has a size of more than 0.2 **millimeters** . A rigid board (2) is bonded to one surface of the spring mat. Another surface of the mat, which comes in contact with a user's skin, serves as a **cushioning** material.
... Ensures air and moisture **permeability** of shin aim. Ensures light contact of shin aim on user's skin. Does not...
Technology Focus:
... The bulk **density** and maximum acceleration of the spring mat of the shin aim are 50 to 250 kilograms per **cubic meter** and 1800 **meters** per **square second** when tested by JIS Z0235.

30/3,K/30 **(Item 30 from file: 350)**
DIALOG(R)File 350:Derwent WPIX

014564578
WPI Acc No: 2002-385281/200242
Related WPI Acc No: 1999-216890
XRAM Acc No: C02-108621
XRPX Acc No: N02-301685

Allergen-barrier fabric **for pillow cover, has** fabric **having preset mean** pore **size, air** permeability , **flexibility and moisture vapor** permeability , **which is resistant to mite-induced allergen particle**

Patent Assignee: PRECISION FABRICS GROUP INC (PREC-N); PRECISION STRUCTURE GROUP INC (PREC-N)
Inventor: DUCKETT C W; SMITH J M
Number of Countries: 031 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 1190652	A2	20020327	EP 2001122475	A	20010920	200242	B
BR 200104238	A	20020507	BR 20014238	A	20010924	200242	
CA 2357984	A1	20020322	CA 2357984	A	20010919	200242	
CN 1345989	A	20020424	CN 2001137155	A	20010922	200251	
JP 2002155448	A	20020531	JP 2001290721	A	20010925	200251	
MX 2001009572	A1	20030801	MX 20019572	A	20010921	200464	

27 MAR 2002 PUB DATE

Priority Applications (No Type Date): US 2000667614 A 20000922
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1190652	A2	E	9	A47C-021/06	
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR					
BR 200104238	A			D06M-013/00	
CA 2357984	A1	E		D03D-001/00	
CN 1345989	A			D03D-015/00	
JP 2002155448	A		9	D03D-015/00	
MX 2001009572	A1			A47C-021/06	

Allergen-barrier fabric **for pillow cover, has** fabric **having preset mean** pore **size, air** permeability , **flexibility and moisture vapor** permeability , **which is resistant to mite-induced allergen particle**

Abstract (Basic):
... Allergen-barrier **fabric** , has **fabric** having preset mean **pore** size, air **permeability** , flexibility and moisture vapor **permeability** , which is resistant to mite-induced allergen particle.
... Allergen-barrier **fabric** comprises a **fabric** substrate **woven** from 0-45% continuous synthetic filament yarns and 55-100% natural or synthetic yarns, finished to produce a **fabric** with mean **pore** size of 4-10 mu, air **permeability** of 0.5-25 cfm, mean **fabric** flexibility of 0.5-6.5 g, and moisture vapor **permeability** greater than 800 g/m2/24 hours. The **fabric** provides a barrier to mite-induced allergen particles...

...barrier for a pillow which involves covering the pillow with a non-coated, non-laminated **fabric** which is **woven** from 0-45% continuous synthetic filament yarns and 55-100% natural or synthetic spun yarns finished to a **fabric** with mean **pore** size of 4-10 mu, air **permeability** of 0.5-25 cfm, mean **fabric** flexibility of 0.5-6.5 g, and moisture vapor **permeability** in excess of 800 g/m2/24 hours. The **fabric** provides a barrier to mite-induced allergen particles; and...

...barrier for a mattress, which involves covering the mattress with a non-coated, non-laminated **fabric** **woven** from 65-100% continuous synthetic filament yarns and finished to a **fabric** with mean **pore** size of 4-10 mu, air **permeability** of 0.5-25 cfm, mean **fabric** flexibility of 0.5-6.5 g, and moisture vapor **permeability** greater than 800 g/m2/24 hours. The **fabric** provides a barrier to mite-induced allergen particles...

...As pillow ticking, mattress ticking, pillow cover, mattress cover, mattress **pad** , bedspread or duvet cover. Also used in product such as sheets, sleeping bags, down-filled...

...The allergen-barrier **fabric** is durable, air- **permeable** and comfortable to use. The **fabric** has improved softness, feel and provides an allergen barrier that impedes and/or stops passage of dust, dust mites and other allergen through the **fabric** . The **fabric** has unique combination of air **porosity** , moisture **permeability** , **fabric** flexibility, extremely small **pore** size and durability to laundering. The **fabric** when used in pillow or mattress, prevent dust mites already existing the mattress and pillows...

...compressed during use. The high pressure water or dye liquor sprayed on surface of the **fabric** further improves the softness and handleability of the **fabric** . Since the **fabric** is tightly **woven** where the yarn-to-yarn **abrasion** is restricted, fiber breakage and linking are seldom observed...

Technology Focus:

... **TEXTILES** AND PAPER...

...Preferred **Fabric** : The **fabric** has a maximum **pore** size of 10 mu. The **fabric** comprises an antimicrobial finish which provides protection against **mold** and mildew and a fluorochemical finish to provide protection against fluid stains...

...Preferred **Fabric** Substrate: The **fabric** substrate is **woven** from 55-65 wt.% spun polyester or spun cotton and 35-45 wt.% filament polyester

Extension Abstract:

... A suitable **fabric** was manufactured from 70 **denier** , 34-filament texturized polyester yarn **woven** in a plain **woven** construction. After **weaving** the **fabric** had 120 **warp** ends per **inch** and 86 filling yarns per **inch** , and weight of 2.28 ounces per yarn. Subsequently the **fabric** was scoured, calendered and treated with durable antimicrobial and fluorochemical finishes. After processing, the **fabric** had 144 **warp** end per **inch** and 89 filling yarns per **inch** , and weight of 2.56 ounces per yard. The **fabric** had maximum **pore** size of 9.935 mu, moisture vapor transmission rate of 1207 g/m2/24 hrs, flexibility of 6.1 g and air **permeability** of 0.622 **cubic** **feet**0 / **minute** . After five launderings, the **fabric** had maximum **pore** size of 12.85 mu, moisture vapor transmission rate of 1265 g/m2/24 hrs, flexibility of 3.2 g and air **permeability** of 1.130 **cubic** **feet** / **minute** .

...Title Terms: **FABRIC** ;

30/3,K/36 (Item 36 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013654390
WPI Acc No: 2001-138602/200114
Related WPI Acc No: 2000-224512; 2000-224513; 2000-224514; 2000-224515; 2000-246484; 2001-024630; 2001-122960; 2001-159130
XRAM Acc No: C01-040984
XRPX Acc No: N01-100857

Disposable absorbent article useful as e.g. diaper , comprises vapor permeable backsheet, liquid permeable topsheet and absorbent body located between the backsheet and the topsheet

Patent Assignee: KIMBERLY-CLARK WORLDWIDE INC (KIMB)
Inventor: AKIN F J; FAULKS M J; MAYBERRY P J; MENARD K M; PAUL S C
Number of Countries: 094 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200108620	A2	20010208	WO 2000US19933	A	20000721	200114	B
AU 200063630	A	20010219	AU 200063630	A	20000721	200129	
GB 2369780	A	20020612	WO 2000US19933	A	20000721	200246	
			GB 20024628	A	20020227		
US 6448464	B1	20020910	US 99146934	P	19990730	200263	
			US 99377294	A	19990819		
MX 2002000879	A1	20020801	WO 2000US19933	A	20000721	200367	
			MX 2002879	A	20020124		

Priority Applications (No Type Date): US 99377294 A 19990819; US 99146934 P 19990730
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200108620	A2	E	57	A61F-013/15	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TZ UG ZW

AU 200063630	A	A61F-013/15	Based on patent WO 200108620
GB 2369780	A	A61F-013/15	Based on patent WO 200108620
US 6448464	B1	A61F-013/15	Provisional application US 99146934
MX 2002000879	A1	A61F-013/15	Based on patent WO 200108620

Disposable absorbent article useful as e.g. diaper , comprises vapor permeable backsheet, liquid permeable topsheet and absorbent body located between the backsheet and the topsheet

Abstract (Basic):
... 1) a vapor **permeable** backsheet (I...

...2) a liquid **permeable** topsheet (II...

...The backsheet defines a water vapor transmission rate of at least about 1000 g per **square meter** per 24 hours. The absorbent article defines a wet/dry skin temperature ratio of no...
... c) (III) located between the backsheet and the topsheet which contains zones of high air **permeability** for improved air exchange; and...

...As **diapers** , feminine care **pads** , incontinence garments and training pants...

Technology Focus:

... The absorbent article further defines a wet air exchange rate of at least about 190 **cubic centimeters** per **minute** and a dry air exchange rate of at least about 525 **cubic centimeters** per **minute** calculated according to a Tracer gas test. The article further defines a skin hydration value of less than about 18 g per **square meter** per hour calculated according to the skin hydration test. The article additionally comprises a surge...

...The layer comprises a nonwoven material having a basis weight of 30 - 120 g per **square meter** .

...

...The water vapor transmission rate of the backsheet is at least about 1500 g per **square meter** per 24 hours. The zones of high air **permeability** in the absorbent body define a **Frazier porosity** which is at least about 10 percent greater than a **Frazier porosity** of portions of the body adjacent to the air passageways. The zones of high air **permeability** comprise from about 5 - 75 percent of a total surface area of the absorbent body...

...layer comprise a hydrophobic, nonwoven material having a thickness of at least about 0.1 **centimeters** and a basis weight of from about 20 - 120 g per **square meter** .

Extension Abstract:

... A test **diaper** contained an absorbent core including an upper and a lower layer. The upper layer extended...

...10 - 11 g). The lower layer had a basis weight of about 230 g per **square meter** and the upper layer had a basis weight of about 560 g per **square meter** to provide a total basis weight of about 790 g per **square meter** in the front section of the core and a basis weight of about 230 g per **square meter** in the back section of the core. The core further defined a width in the crotch section of about 6.35 **centimeters** . The surge layer was located between the core and the topsheet. The **diaper** also included a ventilation layer between the core and the backsheet. The **diaper** included an elasticized leg band assembly along about two thirds of the length of each longitudinal side edge of the **diaper** . Th e assembly had six strands of elastomeric material laminated to a breathable, nonwoven fabric...

...The elastic strands were composed of LYCRA (RTM; elastomer) along the longitudinal length of the **diaper** to elasticize and gather the **diaper** leg bands. A comparative **diaper** had the same construction as above except that the backsheet was replaced with a polyethylene film material having a water vapor transmission rate of less than 100 g per **square meter** per hour. The test/comparative **diaper** were subjected to the tracer gas test and showed the following results: mean dry air exchange rate (cm3/ **min**)=1050/51; mean wet air exchange rate (cm3/ **min**)=360/110; wet/dry ratio=0.34/2.16. Thus the test **diaper** had improved levels of air exchange both when wet and dry when compared to conventional **diapers** .

...Title Terms: **DIAPER** ;

International Patent Class (Main): **A61F-013/15**

30/3,K/39 (Item 39 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013352765 **Image available**
WPI Acc No: 2000-524704/200048
XRAM Acc No: C00-155925
XRPX Acc No: N00-387837

Absorbent article e.g. disposable diapers , **sanitary** napkins , **panty liners, incontinence devices useful for absorbing body fluids, comprises a non-woven fabric cover with a three-dimensional profile region**

Patent Assignee: MCNEIL-PPC INC (MCNI); JOHNSON & JOHNSON (JOHJ)
Inventor: DEOLIVERA R; ULMAN J T; DE OLIVEIRA DELFORGE R
Number of Countries: 035 Number of Patents: 012
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
AU 9965344	A	20000629	AU 9965344	A	19991220	200048	B
EP 1022003	A1	20000726	EP 99125810	A	19991223	200048	
CA 2292992	A1	20000623	CA 2292992	A	19991221	200049	
CN 1257698	A	20000628	CN 99124590	A	19991223	200050	
HU 9904657	A2	20000828	HU 994657	A	19991220	200055	
CZ 9904528	A3	20001011	CZ 994528	A	19991214	200060	
BR 9905970	A	20010116	BR 995970	A	19991223	200107	
ZA 9907833	A	20010829	ZA 997833	A	19991222	200157	
TW 469126	A	20011221	TW 99122695	A	20000217	200254	
MX 2000000181	A1	20020101	MX 2000181	A	20000103	200362	
HU 222423	B1	20030728	HU 994657	A	19991220	200379	
US 6673418	B1	20040106	US 98218972	A	19981223	200411	

Priority Applications (No Type Date): US 98218972 A 19981223
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
AU 9965344	A		35	A61F-013/50	
EP 1022003	A1	E		A61F-013/15	
	Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI				
CA 2292992	A1	E		A61F-013/15	
CN 1257698	A			A61F-013/15	
HU 9904657	A2			A61F-013/15	
CZ 9904528	A3			A61F-013/15	
BR 9905970	A			A61F-013/15	
ZA 9907833	A		35	A61F-000/00	
TW 469126	A			A61F-013/15	
MX 2000000181	A1			A61F-013/15	
HU 222423	B1			A61F-013/15	
US 6673418	B1			B32B-005/14	

Absorbent article e.g. disposable diapers , **sanitary** napkins , **panty liners, incontinence devices useful for absorbing body fluids, comprises a non-woven fabric cover...**

Abstract (Basic):

... raised regions, semi-raised regions and compressed regions. The raised regions have a low fiber **density** relative to the semi-raised regions and the semi-raised regions have low fiber **density** relative to the compressed regions...

...In disposable **diapers** , sanitary **napkins** , panty liners and incontinence devices (claimed), for absorbing body fluids particularly menstrual fluid...

...The low fiber **density** pillows provide a soft texture to the non-woven fabric in the region of the...

...in contact with a wearer's skin remains hydrophilic after multiple fluid introductions. The non- **woven** **fabric** provides enhanced air **permeability** and super fluid penetration rates...

Technology Focus:

... Preferred Composition: The fiber (polypropylene) comprises a homogenous blend of higher **denier** fibers (10-90 %) and low **denier** fibers (90-10 %) having a **denier** in a range 1.5-15 **denier** . The high and low **denier** fibers differ by at least one **denier** . The high **denier** fibers have a **denier** 4-15 (preferably 5) and low **denier** fibers have a **denier** 2-4 (preferably 3). The compressed regions have fiber **density** 0.05-0.17 g per **cubic** cm (**cc**) and thickness 0.005-0.06 **mm** . The semi-raised regions have fiber **density** from 0.04-0.11 g/ **cc** and thickness from 1.5-40 times the thickness of compressed regions. The raised regions have fiber **density** from 0.027-0.07 g/ **cc** and thickness from 6-800 times of the compressed regions. The non-woven fabric is...

...of an intermittent series of discrete dots spaced apart by a distance (0.05-5 **mm**) in a line-like array...

...a central region of the article adjacent to and inward from a longitudinal side. The **second** pair of embossed channels is located adjacent to and inward from a transverse end of...

Extension Abstract:

... A sanitary **napkin** comprising a non-woven fabric 3-dimensional cover was compared with a sanitary **napkin** with a conventional non- **woven** **fabric** cover. An air **permeability** test carried out at an average of 672, had 10 % cross direction (CD) elongation at...

...elongation at 643 and 20 % CD elongation at 695. The results showed that the non- **woven** **fabric** with 3-dimensional cover provided enhanced air **permeability** to a conventional non- **woven** **fabric** .

...Title Terms: **DIAPER** ;

International Patent Class (Main): **A61F-000/00** ...

... **A61F-013/15** ...

... **A61F-013/50** ...

... **B32B-005/14**

International Patent Class (Additional): **B32B-003/00** ...

... **B32B-007/02** ...

... **B32B-027/14**

30/3,K/40 (Item 40 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013157355
WPI Acc No: 2000-329228/200028
XRAM Acc No: C00-099823

Disposable moisture containing web for particular use as hospital bed linen comprises a spun bonded polymer web of a specific density **thickness strength absorption and air** permeability **bonded on one side to a waterproof film**

Patent Assignee: HAWKINS G (HAWK-I)
Inventor: HAWKINS G
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
ZA 9806471	A	19991229	ZA 986471	A	19980721	200028	B

SOUTH AFRICAN PUB DATE = 29 DEC 1999

Priority Applications (No Type Date): ZA 976124 A 19970710
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
ZA 9806471	A		5	D04H-000/00	

... **particular use as hospital bed linen comprises a spun bonded polymer web of a specific** density **thickness strength absorption and air** permeability **bonded on one side to a waterproof film**

Abstract (Basic):
... A disposable bed sheet comprises a spun bonded polyolefin web 0.25 to 0.50 **mm** thick (preferably 0.43), with a mass of 40 60 g/m (preferably 50), a...

...preferably 60) respectively, a tear strength of 30 to 60 N (preferably 50), an air **permeability** of 250 to 100 **meters** cubed/ **meters squared / minute** an **abrasion** of 20 to 50 cycles per 220 g per **cubic** cm (preferably 30) and an absorption of 0 to 3 **seconds** (preferably less than 1.5) where one side of the web is provide with a...
... of and sterilization and handling linen from patients with AIDS and other infectious diseases The **material** has the strength and absorbency for its purpose and can be sterilized...

Technology Focus:
... The polyolefin is polypropylene and the moisture proof layer a one hundred percent pure low **density** polyethylene.

...Title Terms: **DENSITY** ;
International Patent Class (Main): **D04H-000/00**

30/3,K/41 (Item 41 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013052659 **Image available**
WPI Acc No: 2000-224514/200019
Related WPI Acc No: 2000-224512; 2000-224513; 2000-224515; 2000-246484; 2001-024630; 2001-122960; 2001-138602; 2001-159130
XRAM Acc No: C00-068599
XRPX Acc No: N00-168237

Disposable absorbent article, such as diapers, adult incontinence garments for absorbing body fluids and exudates, such as urine has zones of high air permeability **for improved air exchange**

Patent Assignee: KIMBERLY-CLARK WORLDWIDE INC (KIMB)
Inventor: AKIN F J; FAULKS M J; MAYBERRY P J; MERNARD K M; PAUL S C; WRIGHT A S; MENARD K M
Number of Countries: 088 Number of Patents: 012
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200010499	A1	20000302	WO 99US19178	A	19990823	200019	B
AU 9957822	A	20000314	AU 9957822	A	19990823	200031	
EP 1107716	A1	20010620	EP 99945142	A	19990823	200135	
			WO 99US19178	A	19990823		
BR 9913181	A	20011009	BR 9913181	A	19990823	200168	
			WO 99US19178	A	19990823		
ZA 200100904	A	20011031	ZA 2001904	A	20010201	200173	
CN 1314800	A	20010926	CN 99810121	A	19990823	200206	
KR 2001085580	A	20010907	KR 2001702350	A	20010224	200218	
MX 2001001078	A1	20010601	MX 20011078	A	20010129	200235	
AU 746862	B	20020502	AU 9957822	A	19990823	200238	
KR 2002014841	A	20020225	KR 2002701278	A	20020129	200258	
JP 2002539851	W	20021126	WO 99US19178	A	19990823	200307	
			JP 2000565824	A	19990823		
RU 2222303	C2	20040127	WO 99US19178	A	19990823	200414	
			RU 2001107967	A	19990823		

Priority Applications (No Type Date): US 99377294 A 19990819; US 98139824 A 19980825; US 99146934 P 19990730
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200010499	A1	E	68	A61F-013/15	
Designated States (National): AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZA ZW					
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW					
AU 9957822	A			A61F-013/15	Based on patent WO 200010499
EP 1107716	A1	E		A61F-013/15	Based on patent WO 200010499
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI					
BR 9913181	A			A61F-013/15	Based on patent WO 200010499
ZA 200100904	A		70	A61F-000/00	
CN 1314800	A			A61F-013/15	
KR 2001085580	A			A61F-013/15	
MX 2001001078	A1			A61F-013/15	
AU 746862	B			A61F-013/15	Previous Publ. patent AU 9957822 Based on patent WO 200010499
KR 2002014841	A			A61F-013/15	
JP 2002539851	W		69	A61F-013/15	Based on patent WO 200010499
RU 2222303	C2			A61F-013/49	Based on patent WO 200010499

Disposable absorbent article, such as diapers **, adult incontinence garments for absorbing body fluids and exudates, such as urine has zones of high air** permeability **for improved air exchange**

Abstract (Basic):

... A disposable absorbent article includes a vapor **permeable** backsheet, a liquid **permeable** topsheet facing the backsheet, an absorbent body, a ventilation layer and the absorbent body, and...

...Skin Temperature ratio of not more than 1.01 and a Water Vapor Transmission Rate (**WVTR**) of at least 1000 g/ **square meter** /24 h.

... intermediate section that interconnects the front and rear waist sections. The article includes a vapor **permeable** backsheet, a liquid **permeable** topsheet facing the backsheet; an absorbent body between the backsheet and the topsheet, which defines several zones of high air **permeability** ; a ventilation layer between the backsheet and the absorbent body; and a surge management located between the topsheet and the absorbent body. The vapor **permeable** backsheet is a liquid impermeable which defines a Water Vapor Transmission Rate (**WVTR**) of at least 1000 g/ **square meter** /24 h as calculated by Water Vapor Transmission Test. The absorbent article has a Wet...

...The disposable absorbent article (e.g. **diaper** , adult incontinence garments) for absorbing body fluids and exudates, such as urine...

... **Diaper** (10

Technology Focus:

... The vapor **permeable** backsheet has a Hydrohead Value of at least 60 cm, preferably 80 cm as measured by Hydrostatic Pressure Test. The vapor **permeable** backsheet has a **WVTR** of at least 1500 g/ **square meter** /24 h as calculated by Water Vapor Transmission Test. The zones of high air **permeability** in the absorbent body defines a **Frazier Porosity** of at least 10%, preferably 20% greater than a **Frazier Porosity** of portions of the absorbent body adjacent to the zones of high air **permeability** . The absorbent article defines a Wet Air Exchange Rate of at least 190 **cubic** cm/ **min** , preferably at least 250 **cubic** cm/ **min** and a Dry Air Exchange Rate of at least 525 **cubic** cm, preferably 625 **cubic** cm/ **min** . The ratio between the Wet Air Exchange Rate/Dry Air Exchange Rate is at least...

...Tracer Gas Test. The article has a Skin Hydration Value of less than 18 g/ **square meter** /h, preferably less than 12 g/ **square meter** /h as calculated by Sk in Hydration Test. It has a Wet Skin Temperature/Dry ...

...0.95-1.01 as calculated by Skin Temperature Test. The zone of high air **permeability** comprises 5-75% of the total surface area of the absorbent body...

...thickness of at least 0.1 cm and a weight basis of 20-120 g/ **square meter** . The surge management layer is made from a nonwoven material having a weight basis of 30-120 g/ **square meter** .

Extension Abstract:

... In an EMBODIMENT of the article, a **diaper** (10) may include a ventilation layer (32) between the absorbent body (24) and the backsheet (20). The ventilation layer facilitates the movement of air within and through the **diaper** and prevent the backsheet from being in surface to surface contact with the absorbent body...

...the fluid exudates and improve air exchange and distribution of the

fluid exudates within the **diaper** .
...Title Terms: **DIAPER** ;
International Patent Class (Main): **A61F-000/00** ...

... **A61F-013/15** ...

... **A61F-013/49**
International Patent Class (Additional): **A61F-005/44** ...

... **A61F-013/511** ...

... **A61L-015/42**

30/3,K/49 (Item 49 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011824388
WPI Acc No: 1998-241298/199822
Related WPI Acc No: 1996-162218; 1997-121578; 1999-024418; 1999-386156
XRAM Acc No: C98-075407
Wet resilient webs for disposable products, e.g. diapers - **are prepared from high yield pulp fibres and wetting agents in uncreped through air drying process means**
Patent Assignee: KIMBERLY-CLARK WORLDWIDE INC (KIMB)
Inventor: BURAZIN M A; CHEN F; HOLLENBERG D H; KAMPS R J; KRESSNER B E; LINDSAY J D
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
CA 2197485	A	19970908	CA 2197485	A	19970212	199822	B

Priority Applications (No Type Date): US 96614420 A 19960308
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
CA 2197485	A		82	D21F-003/02	

Wet resilient webs for disposable products, e.g. diapers -

...Abstract (Basic): A low **density** non compressively dried three dimensional web has at least 15% dry weight high yield pulp fibres to which a wet strength agent has been added. The web has a **density** of at most 0.3 grams per **cubic centimetre** , an Overall Surface Depth of at least 0.2 **mm** , an In-Plane **Permeability** of 5 x 10-11 **square metres** and a Wet Compressed Bulk of at least 6 **cubic centimetres** per gram...

...wet strength agent is added to give a basis weight of 20-60 grams per **square metres** at a **density** of at most 0.1-0.3 grams per **cubic metre** .
...

...USE - To make disposable paper articles such as **diapers** , sanitary **napkins** , incontinence garments, underarm shields and paper towels
...Title Terms: **DIAPER** ;

30/3,K/57 (Item 57 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010472895
WPI Acc No: 1995-374215/199549
XRAM Acc No: C95-162121
XRPX Acc No: N95-276013
Lofty non woven multi fibre material - where fibres are heat treated to form web with basis weight of at least 20 grams per metre square **, void value of 80 to 117 cm per gram of web and compression resilience, both wet and dry of at least 60 percent**
Patent Assignee: KIMBERLY CLARK CORP (KIMB)
Inventor: BISHOP D F; ELLIS C J
Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
CA 2142675	A	19950905	CA 2142675	A	19950216	199549	B
US 5486166	A	19960123	US 94206986	A	19940304	199610	
			US 95386244	A	19950209		

Priority Applications (No Type Date): US 94206986 A 19940304; US 95386244 A 19950209
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
CA 2142675	A		36	A61F-013/46	
US 5486166	A		11	A61F-013/15	Cont of application US 94206986

... **are heat treated to form web with basis weight of at least 20 grams per** metre square **, void value of 80 to 117 cm per gram of web and compression resilience, both**...

...Abstract (Basic): to 117 cm/g of web, a permability factor of 8000 to 15000 dorey, a **porosity** of 98.6 to 99.3% and a surface area per void volume of 10...

...consisting of at least 50 wt.% of crimped bi-component fibres of at least two **denier** and to include a polyester fibre...

...a surge layer in personal care absorbent articles such as trainer pants, incontinence garments, sanitary **napkins** and the like...
...Abstract (Equivalent): form a lofty nonwoven web having a basis weight of at least 20 grams per **square meter** , a void volume of between about 80 and about 117 **cubic centimetres** per gram of web at 689 dynes per **square centimetre** pressure, a **permeability** of about 8,000 to about 15,000 darcy, a **porosity** of about 98.6% to about 99.4% and a surface area per void volume of about 10 to about 25 **square centimetres** per **cubic centimetre** .

...Title Terms: **METRE** ;
International Patent Class (Main): **A61F-013/15** ...

... **A61F-013/46**
International Patent Class (Additional): **A61F-013/20** ...

... **D04H-003/14** ...

... **D04H-013/00**

30/3,K/58 (Item 58 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010393601
WPI Acc No: 1995-294914/199539
XRAM Acc No: C95-132579
XRPX Acc No: N95-223188

Fibrous non-woven webs of heat-bonded thermoplastic fibres - for use in surge management of fluids in personal care absorbent articles, e.g. diapers , to provide rapid initial intake.

Patent Assignee: KIMBERLY-CLARK WORLDWIDE INC (KIMB); KIMBERLY CLARK CORP (KIMB); KIMBERLY-CLARK CORP (KIMB)
Inventor: ELLIS C J; EVERETT R D; RASMUSSEN C A; EVERET R D
Number of Countries: 018 Number of Patents: 019
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
GB 2287041	A	19950906	GB 953268	A	19950220	199539	B
FR 2716901	A1	19950908	FR 952156	A	19950224	199541	
EP 672774	A2	19950920	EP 95101429	A	19950202	199542	
AU 9513621	A	19950914	AU 9513621	A	19950303	199546	
PT 101669	A	19951020	PT 101669	A	19950303	199547	
JP 7252758	A	19951003	JP 9543771	A	19950303	199548	
CA 2142386	A	19950905	CA 2142386	A	19950213	199549	
BR 9500805	A	19951024	BR 95805	A	19950303	199551	
ZA 9500919	A	19951227	ZA 95919	A	19950206	199605	
US 5490846	A	19960213	US 94206069	A	19940304	199612	
			US 95386245	A	19950209		
EP 672774	A3	19960724	EP 95101429	A	19950202	199639	
GB 2287041	B	19971029	GB 953268	A	19950220	199746	
AU 685566	B	19980122	AU 9513621	A	19950303	199811	
EP 672774	B1	19990714	EP 95101429	A	19950202	199932	
DE 69510707	E	19990819	DE 610707	A	19950202	199939	
			EP 95101429	A	19950202		
ES 2136214	T3	19991116	EP 95101429	A	19950202	200001	
MX 192898	B	19990805	MX 95896	A	19950210	200063	
PH 30875	A	19971223	PH 49969	A	19950215	200254	
KR 358666	B	20030211	KR 954335	A	19950303	200341	

Priority Applications (No Type Date): US 94206069 A 19940304; US 95386245 A 19950209
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
GB 2287041	A		35	D04H-001/54	
FR 2716901	A1		37	D04H-001/56	
EP 672774	A2	E	16	D04H-001/54	
Designated States (Regional): BE DE ES FR GB IT NL SE					
AU 9513621	A			D04H-001/58	
PT 101669	A			A61L-015/00	
JP 7252758	A		12	D04H-001/54	
CA 2142386	A			A61F-013/46	
BR 9500805	A			H04H-001/40	
ZA 9500919	A		36	A41B-000/00	
US 5490846	A		11	A61F-013/15	Cont of application US 94206069
EP 672774	A3			D04H-001/54	
GB 2287041	B			D04H-001/54	
AU 685566	B			D04H-001/58	Previous Publ. patent AU 9513621
EP 672774	B1	E		D04H-001/54	
Designated States (Regional): BE DE ES FR GB IT NL SE					
DE 69510707	E			D04H-001/54	Based on patent EP 672774
ES 2136214	T3			D04H-001/54	Based on patent EP 672774

MX 192898 B A61F-013/020
PH 30875 A A61F-013/15
KR 358666 B D04H-005/06 Previous Publ. patent KR 95032795
... **for use in surge management of fluids in personal care absorbent articles, e.g.** diapers , **to provide rapid initial intake.**

...Abstract (Basic): web. The web has basis wt. at least 20 gsm; void vol. of 40-60 **cc** /g at 689 dynes/ **sq** .cm. pressure; **permeability** of 5000-8000 darcy; **porosity** of 97.2-98.8% and surface area 24-49 **sq** .cm. per **cc** void volume...

...USE - Webs are used in personal care absorbent articles (claimed), e.g. **diapers** , training parts, incontinence garments, sanitary **napkins** and **bandages** .

...Abstract (Equivalent): mixed, single layer nonwoven web having a basis weight of at least 20 grams per **square metre** , a void volume of between about 40 and 60 **cubic centimetres** per gram of web at 689 dynes per **square centimetre** pressure, a **permeability** of about 5,000 to about 8,000 darcy, a **porosity** of about 97.2% to about 98.8% at 689 dynes per **square centimetre** pressure and a surface area per void volume of about 24 to about 49 **square centimetres** per **cubic centimetre** at 689 dynes per **square centimetre** pressure...
...Abstract (Equivalent): mixed, single layer nonwoven web having a basis wt. of at least 20 grams per **square meter** , a void vol. of between about 40 and 60 **cubic centimetres** per gram of web at 689 dynes per **square centimetre** pressure, a **permeability** of about 5,000 to about 8,000 darcy a **porosity** of about 97.2% to about 98.8% and a surface area per void vol. of about 24 to about 49 **square centimetres** per **cubic centimetre** .

...Title Terms: **DIAPER** ;
...International Patent Class (Main): **A61F-013/020** ...

... **A61F-013/15** ...

... **A61F-013/46** ...

... **A61L-015/00** ...

... **D04H-001/54** ...

... **D04H-001/56** ...

... **D04H-001/58** ...
... **D04H-005/06**
International Patent Class (Additional): **A61F-013/054** ...

... **A61F-013/20** ...

... **B32B-005/02** ...

... **D04H-001/010** ...

... **D04H-001/70** ...

... **D04H-003/16**

30/3,K/75 (Item 75 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007912282
WPI Acc No: 1989-177394/198924
XRAM Acc No: C89-078439
XRPX Acc No: N89-135429

Limb compressive support material - has closed cell elastomeric foam layer with holes between elastic porous fabric **layers**

Patent Assignee: LERMAN M (LERM-I)
Inventor: LERMAN M
Number of Countries: 014 Number of Patents: 009
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4832010	A	19890523	US 87122553	A	19871112	198924	B
EP 374281	A	19900627	EP 88121326	A	19881220	199026	N
GB 2226275	A	19900627	GB 8829454	A	19881216	199026	N
AU 8826993	A	19900621				199031	N
CA 1303926	C	19920623	CA 586043	A	19881215	199231	N
GB 2226275	B	19921104	GB 8829454	A	19881216	199245	N
EP 374281	B1	19940316	EP 88121326	A	19881220	199411	N
DE 3888538	G	19940421	DE 3888538	A	19881220	199417	N
			EP 88121326	A	19881220		
ES 2053698	T3	19940801	EP 88121326	A	19881220	199432	N

Priority Applications (No Type Date): US 85743687 A 19850611; US 87122553 A 19871112; CA 586043 A 19881215; DE 3888538 A 19881220; EP 88121326 A 19881220

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4832010	A		8		
EP 374281	A				
Designated States (Regional): AT BE CH DE ES FR GB GR LI NL SE					
EP 374281	B1	E	12	A61F-013/00	
Designated States (Regional): AT BE CH DE ES FR GB GR LI NL SE					
DE 3888538	G			A61F-013/00	Based on patent EP 374281
ES 2053698	T3			A61F-013/00	Based on patent EP 374281
CA 1303926	C			A61F-005/00	
GB 2226275	B			A61F-013/00	

... **has closed cell elastomeric foam layer with holes between elastic** porous fabric **layers**

...Abstract (Basic): layer (28), provided with holes, between two layers (32,34) of flexible and resiliently elastic **porous fabric** , pref. **knitted fabric** .

...Abstract (Equivalent): compression supports for surrounding and supporting a body part by compression in which the composite **material** (12,64) comprises a **porous** base layer (28,70) of a flexible, closed cell elastomeric **material** in this sheet form; a skin-protecting first layer (32,74) of a flexible, resiliently elastic **porous fabric** adhered to a first face of the base layer; and a protective **second** layer (34,76) of a flexible, resiliently elastic **porous fabric** adhered to an opposite **second** face of the base layer; characterised in that the **porous** base layer of closed cell elastomeric **material** has a multiplicity of holes (30,72) extending through the entire depth of the sheet...

...of the sheet, the closed cell elastomeric material (12,64) having sufficient elasticity and a **density** of at least 160 kg/m3 (10 pounds per **cubic foot**) to provide orthopaedic compression support, in which the first (32,74) and **second** layers (34,76) provide a means for reinforcing the elasticity of the **porous** base layer (28,70) so that the composite **material** (12,64) consisting of the combination of said base layer (28,70), first layer (32,74), and **second** layer (34,76) maintains sufficient elasticity and **density** to provide a useful level of orthopaedic compression support, and in which said composite **material** (12,64) is **porous** to air and water passing through the depth of the composite material (12,64) to...

...Abstract (Equivalent): elastic orthopedic compression supports for surrounding and supporting a body part by compression, the composite **material** comprising: a **porous** base layer of a flexible, closed cell elastomeric **material** in thin sheet form and having a multiplicity of holes extending through the entire depth...

...surface area of the sheet, the closed cell elastomeric material having sufficient elasticity and a **density** of at least 160 kg per **cubic meter** , (10 pounds per **cubic foot**) to provide orthopedic compression support; a skin-protecting first layer of a flexible, resilient elastic **porous fabric** adhered to a first face of the base layer; and a protective **second** layer of a flexible, resiliently elastic **porous fabric** adhered to an opposite **second** face of the base layer, the first and **second** layers providing a means for reinforcing the elasticity of the **porous** base layer so that the composite **material** consisting of the comination of said base layer, first layer, and **second** layer maintains sufficient elasticity and **density** to provide a useful level of orthopedic compression support, and in which said composite **material** is **porous** to air and water passing through the depth of said composite material to provide a...

...Title Terms: **COMPRESS** ;

International Patent Class (Additional): **A61F-002/80** ...

... **A61F-005/01** ...

... **A61F-013/06** ...

... **A61F-013/10** ...

... **B32B-001/08** ...

... **B32B-005/04** ...

... **B32B-005/26** ...

... **B32B-025/10** ...

... **B32B-025/16** ...

... **B32B-033/00**

30/3,K/85 (Item 85 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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Good!!

007144399
WPI Acc No: 1987-144396/198721
XRAM Acc No: C87-060162

Air permeable **silicone release liner** woven **or nonwoven** materials - **coated with irradiation hardenable silicone compsn. with low penetration**

Patent Assignee: MEAD RELEASE PROD INC (MEAD-N)
Inventor: LEBEL A P
Number of Countries: 005 Number of Patents: 008
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 3638771	A	19870521	DE 3638771	A	19861113	198721	B
GB 2183174	A	19870603	GB 8627312	A	19861114	198722	
FR 2590173	A	19870522	FR 8615743	A	19861113	198727	
JP 62117881	A	19870529	JP 86271655	A	19861114	198727	
GB 2183174	B	19891004				198940	
US 4871611	A	19891003	US 8763799	A	19870623	198949	
DE 3638771	C2	19950420	DE 3638771	A	19861113	199520	
JP 2681062	B2	19971119	JP 86271655	A	19861114	199751	

Priority Applications (No Type Date): US 85799215 A 19851115
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 3638771	A		7		
US 4871611	A		6		
DE 3638771	C2		7	D06N-007/02	
JP 2681062	B2		5	D06M-015/643	Previous Publ. patent JP 62117881

"US" VERSION SAYS SUITABLE FOR "SURGICAL TAPE"

Air permeable **silicone release liner** woven **or nonwoven** materials -

...Abstract (Basic): Air **permeable** base or release liner **material** contg. an air **permeable** **woven** or non- **woven** support component or fleece **material** , coated on one or both sides with a silicone release liner consisting of an irradiation...

SEE CLAIM 3 IN "US" VERSION

...such a type and method that the support material is essentially not penetrated. The support **material** pref. has a moisture vapour transmission rate (**MVTR**) of more than 38.75 g/ **sq** .cm/24h20 deg.C/80% air humidity and an air **permeability** of more than 2438.4 **cc** / **min** / **cc** . Pref. electron irradiation is used, the polysiloxane contains ethylenically unsatd. gps. and the coating is applied at a rate of 0.8 - 1.6 g/ **sq** .cm. as an essentially solvent-free and non-aq. compsn. Dwell time (time between application of the coating and irradiation) of the compsn. is pref. less than 5 **seconds** .

...

...release liner material of the above specification is produced by (a) prepg. a two-sided **woven** or non- **woven** air- **permeable** support (b) applying an irradiation hardenable compsn. contg. a polysiloxane on one side of the...

...USE/ADVANTAGE - The product is useful as air **permeable** , pressure sensitive adhesive tape having good adhesion to substrates with minimum penetration

...Abstract (Equivalent): does not penetrate the support. Support has moisture vapour transmission rate more than 250g per **sq** .m. per 24 hrs. per 20 deg.C per 80% relative humidity, and air **permeability**

more than 80 **cu . ft .** per **min .** per **sq . ft .**
...

...USE - For surgical tapes and **diaper** tapes.
...Title Terms: **PERMEABLE** ;
...International Patent Class (Additional): **A61F-013/02** ...

... **A61L-015/06** ...
... **A61L-025/00** ...

... **B32B-007/00** ...

... **B32B-027/06**

30/3,K/100 (Item 100 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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Good!

001357504
WPI Acc No: 1975-07128W/197504
Disposable plastics covered fibrous bed covering - having a permeable **compressible fibrous mat and an air** permeable **cover**
Patent Assignee: R D DAVIS (DAVI-I)
Number of Countries: 007 Number of Patents: 007
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 3859678	A	19750114				197504	B
DE 2428777	A	19750410				197516	
SE 7407485	A	19750505				197522	
DK 7403131	A	19750602				197527	
FR 2246243	A	19750606				197528	
GB 1451829	A	19761006				197641	
CA 1012262	A	19770614				197726	

All claim 1 in "US" VERSION

Priority Applications (No Type Date): US 73404293 A 19731009

... **having a** permeable **compressible fibrous mat and an air** permeable **cover**
...Abstract (Basic): 50% of the total vol. of the mat, such that the mat has an air **permeability** of >=300 **cu . ft ./ min ./- sq . ft .**, and a non- **woven** polymeric cover sheet having an air **permeability** of >=200 **cu . ft ./ min . sq . ft .** The edges of the cover sheet are folded under the edges of the mat and secured in that configuration to retain the sheet in position. The **porous** compressible nature of the mat and the air **permeability** of the mat and cover sheet causes circulation of air through the **pad** and over the patients skin which helps to prevent bed sores.
...Title Terms: **PERMEABLE** ;

30/3,K/104 (Item 104 from file: 347)
DIALOG(R)File 347:JAPIO

04201337 **Image available**
PERMEABLE AND WATERPROOF SHEET HAVING STRETCHING NERVE

PUB. NO.: 05-193037 [JP 5193037 A]
PUBLISHED: August 03, 1993 (19930803)
INVENTOR(s): NISHIKAWA TOSHIO
ANDO KATSUTOSHI
TAKAHASHI MASAKADO
APPLICANT(s): TORAY IND INC [000315] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 04-005996 [JP 925996]
FILED: January 16, 1992 (19920116)
JOURNAL: Section: M, Section No. 1511, Vol. 17, No. 623, Pg. 44, November 17, 1993 (19931117)

house/home insulation

PERMEABLE AND WATERPROOF SHEET HAVING STRETCHING NERVE

INTL CLASS: **B32B-005/26** ; A01G-013/02; **B32B-005/02** ; **B32B-027/18** ; **B32B-027/32** ; D06N-007/04; E04B-001/70

ABSTRACT

PURPOSE: To improve physical properties, functionality and workability by basically forming a **permeable** and moistureproof sheet by a laminated nonwoven **fabric** , in which a melt blow ultra-thin fiber nonwoven fabric and a lint nonwoven fabric, in which means fiber diameters, weight per **square meters** , the apparent **density** of fibers, etc., are specified respectively, are heat-fused partially...

... is interposed between an external wall 1 and a heat-insulating material 4. A house **wrap** 3 is interposed for preventing the deterioration of a heat-insulative effect. A moistureproof material...

... and an interior material 6 are disposed inside the heat- insulating material 4. The house **wrap** 3 is formed of a laminated nonwoven fabric, in which a melt blow ultra-thin...

...fabric A having a mean fiber diameter of 5.mu.m or less, weight per **square meters** of 15g/m(**sup** 2) and the apparent **density** of 0.40g/cm(**sup** 3) or less of fibers and a lint nonwoven fabric B having the means fiber diameter of 10.mu.m or less and the weight per **square meters** of 20g/m(**sup** 2) or more are heat-fused partially, at that time. A fiber sufficiency rate is brought...

```
Set     Items   Description
S1     176145   BANDAG? OR COMPRESS OR COMPRESSES OR NAPKIN? OR PAD OR PADS
            OR DRESSING? OR BANDAID? OR BAND()(AID OR AIDS)
S2     113102   SANITARY()WIPE? OR PATCH? OR POULTIC? OR POLTIC? OR WRAP? ?
            OR DIAPER? OR CUSHION?
S3     242091   SCAB? OR WOUND? OR LACERAT? OR ABRASION? OR LESION? OR ULC-
           ER? OR BLISTER? OR CHANCR? OR TRAUMA? OR INJUR?
S4    1183015   FABRIC? OR TEXTIL? OR MATERIAL? OR GAUZ? OR CLOTH OR CLOTHS
            OR MESH? OR TRICOT OR DOUBLE()NEEDL?()BAR OR FIBER? OR FIBRE?
S5     295241   KNIT? OR WOVEN? OR MOLD? OR MOULD? OR NETTING? OR WEFT? ? -
           OR WEAV? OR WARP? ?
S6     171915   POROS? OR POROUS? OR MICROPOROS? OR MICROPOROUS? OR POROSE?
            OR POROUSE? OR PORE?
S7     154053   PERFORAT? OR PERMEAB? OR FRAZIER? OR MVTR OR WVTR OR (MOIS-
           TUR? OR WATER?)()(VAPOR OR VAPOUR)()TRANSFER?()RATE?
S8     321537   DENSIT? OR DENIER? OR DECITEX? OR TEX OR PENNYWEIGHT? OR S-
           CRUPUL?
S9     167569   CU OR CUBIC? OR CUFT OR CUFEET OR CUFOOT OR SUP3 OR SUP()3
           OR "SUP.3" OR ".SUP.3" OR CUIN OR CUINCH?
S10    136379   FT OR FOOT OR FEET
S11    300948   CC OR CENTIMET? OR METER? OR METR?
S12    633534   MM OR MILLIMET? OR "IN." OR INCH? OR "FT." OR "MM." OR MMS
           OR "CC." OR CCS
S13   1381613   MIN OR MINS OR "MIN." OR MINUTE? OR SEC OR SECS OR SECOND?
S14    317962   SQ OR SQUARE? OR SQFT? OR SQFOOT? OR SQFOOT? OR SQFEET? OR
           SQIN? OR SQINCH? OR SUP2 OR SUP()2 OR "SUP.2" OR ".SUP.2"
S15         0   "FT./MIN./SQ.FT."
S16    320182   IC=(A61F? OR A61K? OR A61L? OR B32B? OR B26F? OR D04H?)
S17   1315377   S1:S2 OR (S3 OR S4:S5)
S18    204161   (S1:S2 OR S4:S5) AND S3
S19   1315377   S17:S18
S20     41111   S19 AND (S3 OR SORE? OR DECUBIT?)(10N)(S1:S2 OR S4:S5)
S21     10477   S20 AND S6:S7(10N)S1:S5
S22      1542   S21 AND S6:S7(20N)S8
S23     10477   S21:S22
S24       162   S23 AND S9(5N)S10:S12(5N)S13(5N)S14
S25       157   S22 AND S9(10N)S10:S12(10N)S13:S15
S26       266   S24:S25
S27       121   S26 AND S16
S28       223   S26 AND S6:S7(10N)S9:S15
S29       104   S27 AND S28
S30       185   S28 AND S6:S7(5N)S9:S15
S31       226   S29:S30 OR S27
S32       174   S31 AND (S3 OR SORE? OR DECUBIT?)(5N)(S1:S2 OR S4:S5)
S33       168   S32 AND S6:S7(5N)S1:S5
S34       168   IDPAT (sorted in duplicate/non-duplicate order)
? show files
File 348:EUROPEAN PATENTS 1978-2004/Oct W01
         (c) 2004 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20041007,UT=20040930
         (c) 2004 WIPO/Univentio
?
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34/3,K/146 (Item 146 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2004 WIPO/Univentio. All rts. reserv.

00541563 **Image available**
TEXTILE **INCLUDING SUPER ABSORBENT** FIBERS
TEXTILE **A** FIBRES **SUPER-ABSORBANTES**
Patent Applicant/Assignee:
MILLENNIUM GROUND CONTROL INC,
Inventor(s):
HERLIHY Joseph P,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200004936 A2 20000203 (WO 0004936)
Application: WO 99US16184 19990715 (PCT/WO US9916184)
Priority Application: US 9893695 19980722; US 99352263 19990713
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZA ZW GH GM KE LS MW SD SL SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
Publication Language: English
Fulltext Word Count: 4804

TEXTILE **INCLUDING SUPER ABSORBENT** FIBERS
TEXTILE **A** FIBRES **SUPER-ABSORBANTES**
Main International Patent Class: **A61L-015/60**
Fulltext Availability:
Detailed Description
Claims

English Abstract
A composite **fabric** includes a moisture **permeable** top layer and a bottom layer including super absorbent **fibers** . The layers are bound together by a moisture **permeable** adhesive layer, by being needle punched together or by heat sensitive **fibers** to which heat and pressure are applied in one or both of the top and...

French Abstract
L'invention concerne un tissu composite qui comprend une couche superieure **permeable** a l'humidite et une couche inferieure contenant des **fibres** super-absorbantes. Ces couches sont assemblees entre elles par une couche adhesive **permeable** a l'humidite, par liage mecanique ou par des **fibres** thermosensibles traitees par application de chaleur et de pression sur la couche superieure, sur la...

Detailed Description
TEXTILE INCTjIJDTNG SUPER ABSORBENT **FIBERS**
13 ta&amml
1. Field of the Invention
This application relates to a **textile** composite including super absorbent **fibers** . The **textile** is intended for use in the construction of clothing, linings, footwear, wipes, towels, filtration media, medical **wraps** , sport **wraps** , and otherarticlesand apparel in which it is desired to promote absorption and transportation of fluids, such as body fluids, away from their source, such as the skin. The **textile** is suitable for use as insoles, sock liners, headbands, protective **pads**

Super Good!!!
del claims
PUB DATE 3 FEB 2000
US FILE DATE 22 JULY 1998

and the like.

2. Related Art
Super absorbent polymers have the ability to absorb many...

...in powder granule or bead form are mainly used in disposable hygienic products particularly baby **diapers** . More recently, super absorbent **fibers** have become available, but have not yet found wide application.

Numerous attempts have been made to provide **textiles** which absorb liquids produced by the body, as in sweat bands, feminine hygiene products, **diapers** and'shoe inserts, insoles or sockliners. Forexample,U.S.PatentNo.5,763,')35showsamaterialuseablefor,e.g...

...foam matrix. U.S. Patent No. 4,531,738 teaches a product including stiffened cellulosic **fibers** interspersed with super absorbent polymer particles powder or granules.

Both patents teach away from a **textile** useable for clothing articles because of thickness, hand, density or stiffness.

In known products, a...

...affected by adhesives.

Accordingly, a need exists for a soft, highly absorbent structure capable of **textile** usage and exhibiting high integrity and thin construction. Such an absorbent **textile** product would readily find use in sock linings of shoes, where it would wick perspiration away from the foot.

Summary of the Invention
The present invention provides an improved composite **fabric** .
The present invention may be realized in a composite **fabric** comprising a fluid **permeable** hydrophobic top layer; and an absorbent bottom layer including super absorbent polymer **fibers** . In some embodiments, the super absorbent **fibers** are included in an amount of about 5-60% by dry weight. In some embodiments, the top layer is **permeable** and hydrophobic, sustaining an air flow of 100-350 **cubic feet** per **square foot** per **minute** , measured under ASTM D737, and sustaining moisture vapor transmission of 50-150 grams per **square** meter per 24 hours, measured under ASTM E96(A). The super absorbent **fibers** can be needle-punched into the top layer from below to form the bottom layer.

The composite **fabric** can further comprise a moisture-pen-neable adhesive binding the top layer to the bottom...

...can comprise a web of heat activated polyamide polyolefin.
Alternatively, the adhesive can be another **material** having a glue line activation temperature of approximately 120'C. When ,in adhesive is used ...

...0.6 to 1.5 ounces per square yard.

In some embodiments, the super absorbent **fibers** can be about 5-1 00 microns in diameter and about 0 0.50 inches long. The supcr absorbent **fibers** ofsoine embodiments can further be characterized as absorbing about 200-300 grams of water per gram of **fiber** . In some embodiments the super absorbent **fibers** exhibit water retention rates at 0.5 PSI of 160250 grams of water per grarn of **fiber** .

In embodiments not using a separate adhesive layer, the bottom layer can further comprise low melt temperature **fibers** , whereby the top and bottom layer are bonded together by heat and pressure applied to activate the low melt temperature **fibers** . The low melt temperature **fibers** of such embodiments can be included in the bottom layer at 5-50% by dry...

...bonded to the bottom layer. The accessory layer can add resilience, insulation, windproofing, water resistance, **abrasion** resistance, **moldability** or decoration to the composite.

The composites of various embodiments described above can also further...

...description of several methods of making embodiments thereof and detailed descriptions of several examples of **textiles** embodying the invention.
Embodiments of the invention use super absorbent **fibers** . **Fibers** of about 50-1 00 microns diameter and about 0 0.50 in. length are preferred, although **fibers** of other dimensions can also be used. Super absorbent **fibers** have a number of interesting properties.

Those which are particularly useful in connection with some...

...of the invention include absorption of about 200-300 grams of water per gram of **fiber** and a retention at 0.5 PSI of about 160-250 grams of water per gram of **fiber** . The **fiber** surface has a crenulated surface structure with longitudinal grooves beneficial in transporting moisture along the surface. **Fibers** will absorb 95% of their capacity in 15 seconds compared to minutes for particles to absorb a similar amount. It has been discovered that **fiber** with a length to diameter ratio of at least I 00 where **fiber** diameter is about 3 0 micron has approximately, 8 times higher surface area, is less...

...keeping the adjacent surfaces dry. The layered composite can include.

1 5 1 . A hydrophobic **fabric** , or a dual-zoned **fabric** with an exposed surface of hydrophobic **fibers** and a lower surface of **fibers** of a different size or treated for surface hydrophillicity with a primary aim of moving moisture away from the top
surface (i.e., transpiring moisture through the **fabric**),
2. An optional adhesive layer which permits moisture transpiration to continue
through to the bottom layer,
J. A bottom layer of a **fabric** or sheet **material** consisting of super absorbent **fibers** and other non-absorbent **fibers** and/or absorbent such as polypropylene, polyester and
the like,
4. An optional accessory layer...

...additional desired properties. For example, the accessory layer can add resilience, insulation, windproofing, water resistance, **abrasion** resistance, **moldability** or
decoration, and
5. Optional dry solids having germicidal, bacteriological or odor control properties or...

...keeping the body dry.

As described below, it is possible to needle-punch super absorbent **fibers** directly into and through the bottom surface of the top layer so that the adhesive layer is eliminated. The bottom layer of the two-part

fabric composite thus constructed consists of a top layer having a top surface adjacent a body part and super absorbent **fibers** to absorb and gel moisture and body fluids, keeping the top surface and the body dry.

Otherwise phrased, embodiments of the invention may include a **fabric** composite **material** comprising a super absorbent polymer **fiber** layer bonded to a less hydrophilic top cover with a **permeable** adhesive or other connection system in order to allow liquid penetration through the top layer...

...chemically bonded, or needle-punched webs, or high-loft rolled goods consisting of super absorbent **fibers** blended with polyester or like non-absorbent **fibers** and/or rayon or like absorbent **fibers** in a ratio to best accomodate the end use. In one use, super absorbent **fibers** have been incorporated at 5-60% by weight super absorbent to non-absorbent **material** . Yet more preferably, the super absorbent **fibers** can be incorporated at 5-30% by weight.

In order to facilitate bonding the layers...

...of an adhesive layer, the top or bottom layer may include some low melt temperature **fibers** , e.g. a low melt temperature polymer such as a polyamide polyolefin. In preferred constructions, the bottom layer, which preferably includes 5-60% by dry weight of super absorbent **fibers** , also preferably includes 550% by dry weight of low melt temperature **fibers** . The low melt temperature **fibers** may, for example, be a thermoplastic **material** . The layers are bonded together using heat, and pressure such as described below.

Suitable super absorbent **fibers** are available from a number of sources. As noted above, **FIBERSORB** **fibers** from Camelot Technologies of Albert, Canada are presently preferred, but other types of super-absorbent **fibers** may be used, such as cross-linked carboxymethyl-cellulose md polyrner-graftcd cellulose (including llydrolyzcd polyacrylonitrile, polyacrylic esters, and polyacrylic and polymethacrylic acids). See, for example, Chatterice, **Textile** Science ind Technology, vol. 7; U.S. Patent No. 4,036,598; and I I.S. Palent No. 919,077.

The top layer may consist of a **fabric** or film. The **fabric** may be **woven** , non- **woven** or ol' **knit** **material** , symlictic or natL11111 **fiber** . The film may be C011tigLIOUS or **perforated** polymeric film. The top layer is selected to meet the needs of the particular end...delivers a top layer 102, stock roll 103 delivers a web of heat-sensitive, moisture- **permeable** adhesive 104 and stock roll 105 delivers a **fiber** or web 106 of super absorbent **fibers** . Super absorbent **fibers** suitable for use in embodiments of the invention include **FIBERSORB** **fibers** , available from Camelot Technologies of Alberta, Canada. The top layer 102, adhesive web 104 and super absorbent **fiber** web 106 are brought together and advanced on a conveyor to a bonding station where...

...the top layer 102 can be needle punched from the bottom side with super absorbent **fibers** , to simplify the manufacturing process but still create a **fabric** composite with a hydrophobic top surface which is moisture **permeable** and a bottom layer which absorbs moisture and other body fluids and traps them in...

...from a stock roll IO 1 into a needle puncher 301 which pushes super absorbent **fiber** into the top layer 102 from below. The upper surface is largely free of super absorbent **fiber** , while the lower surface is

largely covered with super absorbent **fiber** due to the needle puncher operating from that side. The completed composite is accumulated on...

...bonded together by heat and pressure applied by calendaring rolls 201 to produce the composite **fabric** 501.
The structure of the composite **fabric** is shown schematically in Fig. 6. The bottom layer 601 contains super absorbent **fibers** . The top layer 602 is **permeable** to moisture. The bottom and top layers are bonded together, optionally by a layer of...

...greater detail in Fig. 7. In the embodiment shown, the top layer 602 is a **woven** **fabric** having **warp** and **weft** **fibers** 701 and 702. The top layer 602 is in contact with the bottom layer 601...

...The drop 901 first contacts the top layer 602, as shown in Fig, 8A, The **fabric** of the top layer 602 is hydrophobic, allowing the water to pass through without wetting the **fibers** . The drop ofwater is brought into contact with the bottom layer 601 at contact point 703. The super absorbent **fibers** in bottom layer 601 rapidly take up the moisture, within seconds, as shown in Fig...

...only slowly, through evaporation.

The following examples indicate the utility of combining super absorbent polymer **fibers** contained in a **fabric** bonded to a cover stock where the cover stock (top layer) is in communication with...
...weight.

Processing
For each example the bottom layer of the composite consisted of entangled synthetic **fibers** containing super absorbent polymer **fibers** in varying ratios.

The top layer or layer generally positioned in communication with a moisture source is selected by its **abrasion** resistance, tear strength, absorption speed, thickness, hand, and economics.

The examples tested five top layer materials generally described as moisture wicking **fabrics** . Moisture wicking **fabrics** are **fabrics** designed to take a drop of ...to the opposite side spreading it out over a larger surface area. The top layer **fabric** should not be hydrophilic and would best be hydrophobic in its **material** of construction, its structure, or its post treatment. The goal is to draw moisture transport ...

...give it up to bottom layer where it is gelled by the super absorbent polymer **fibers** .
The bonding adhesive between the top layer and the bottom layer is fast acting adhesive, non water soluble, water pen-neable, flexible adhesive. The **material** selected was SPA III web adhesive. Application of heat through top, bottom or both lavers...

...when exposed to air.

1 5 EXAMPLE I
Samples were prepared from eight super absorbent **fiber** containing **fabrics** supplied by Knowlton Nonwovens, Utica, NY of various thickness at approximately 60% parts/weight of super absorbent polymer **fiber** , bonded to ETC **Fabric** provided by SHEEHAN Sales, Beverly, MA, with a heat activated web adhesive SPA III from...

...Knowlton.

EXAMPLE2
A similar set of samples per example I were prepared from super absorbent **fiber** containing 4 **fabrics** supplied by Texel, Quebec, Canada.

Sample 9 10 I 1 12
Thickness .022 .023 .032...
...hours.

EXAMPLE3
A set of samples as in Example I were prepared from a Knowlton **fabric** in which the super absorbent **fiber** content was reduced from 60% as in example I to 15%.

Four separate top cover...

...It was C011CILOCCI that in Exanipics 13-16 with a lower percentage ol'super absorbent **fibers** , higher retained weight per square inch, and faster evaporative speeds that gel blocking was exhibited...

...samples I- 1 2.

Gel blocking occurs when super absorbent polymer is wetted and the **fiber** swells so as to inhibit further gelling.

EXAMPLE4
A sample without the use of an...

...layer 102 to bottom layer 106 is accomplished by the selection of a thermally sensitive **fiber** mixed into the bottom layer 106. The bottom (absorbent) layer has been defined as an entangled roll goods comprising super absorbent **fibers** with synthetic **fibers** . Selection of a thermally sensitive synthetic **fiber** such as polypropylene or polyester with fusion temperatures of I OO'C and 240'C respectively can be combined at up to 90 percent by weight with super absorbent **fiber** . The **fiber** mix of thermally sensitive and super absorbent **fiber** is entangled by air laying, wet laying needle punching or hydro entanglement.

The resultant bottom...

...raises the temperature of the composite above the fusion temperature of the thermally sensitive synthetic **fiber** in the bottom layer causing some melting of thermally sensitive **fiber** creating a thermal bond.

A particular roll goods product containing a thermally sensitive **fiber** (fusible) polyester **fiber** content is available commercially and supplied as NLS 85, from BFF I 0 Nonwovens, Somerset wrapped around an elbowjointonthearm.
Itwasnotedthatthewrapimpartedusefulcoldtothejointforabout twice the time of a **wrap** not containing super absorbent polymer, thus demonstrating a clear advantage over an ordinary ice pack. A frozen **pad** or **wrap** of this construction imparts the cold storage capacity of ice without the liquefaction upon melting...

Claim
Claims

1 A composite **fabric** comprising:

a fluid **permeable** hydrophobic top layer; and
an absorbent bottom layer including super absorbent polymer **fibers** .

2 The composite **fabric** of claim 1, wherein the super absorbent **fibers** are included in an amount of about 5-60% by dry weight.

3 The composite **fabric** of claim 1, wherein the top layer is **permeable** and hydrophobic, sustaining an air flow of 100-350 **cubic feet** per **square foot** per **minute** , measured under ASTM D737, an sustaining moisture vapor transmission of 50-150 grams per **square** meter per 24 hours, measured under ASTM E96(A).

4 The composite **fabric** of claim 1, wherein the super absorbent **fibers** are needlepunched into the top layer from below to form the bottom layer.

5 The composite **fabric** of claim 1, further comprising a moisture-**permeable** adhesive binding the top layer to the bottom layer.
6 The composite **Fabric** oFelaim 5, wherciti said adhesive binder comprises a wcb oflicat activated polyamide polyolefin.

7 The...

...the adhesive having a glue line activation temperature of approximately 120'C.

8 The composite **fabric** of claim 5, the adhesive comprising a web having a basis weight of 0.6 to 1.5 ounces per square yard.

9 The composite **fabric** of claim 1, wherein the super absorbent **fibers** are about 5-1 00 microns in diameter and about 0 0.50 inches long. . The composite Eabric of'claim 1, wherein the super absorbent **fibers** absorb about 200300 grams of water per gram of **fiber** . H. The composite **Fabric** of claim 1, wherein the super absorbent fibcrs exhibit water retention rates at 0.5 PSI of 160-250 grams of water per gram of **fiber** .

12 The composite **fabric** of claim 1, the bottom layer further comprising: low melt temperature **fibers** , whereby the top and bottom layer are bonded together by heat and pressure applied to activate the low melt temperature **fibers** .
13 The composite **fabric** of claim 12, wherein the low melt temperature **fibers** are included in the bottom layer at 5-50% by dry weight.

14 The composite **fabric** of claim 12, wherein the super absorbent **fibers** are included in an amount of about 5-60% by dry weight.

15 The composite **fabric** of claim 12, wherein the top layer is **permeable** and hydrophobic, sustaining an air flow of 100-350 **cubic feet** per **square foot** per **minute** , measured under ASTM D737, an sustaining moisture vapor transmission of 50-150 grams per **square** meter per 24 hours, measured under ASTM E96(A).

16 The composite **fabric** of claim 12, wherein the super absorbent **fibers** are needlepunched into the top layer from below to form the bottom layer.

17 The composite **fabric** of claim 12, further comprising a moisture-**permeable** adhesive binding the top layer to the bottom layer.

18 The composite **fabric** of claim 17, wherein said adhesive binder

comprises a web of heat activated polyarnide polyolefin.
19 The composite **fabric** of claim 17, the adhesive having a glue line activation temperature of approximately 120'C. - 17

20 The composite **fabric** of claim 17, the adhesive comprising a web having a basis weight of 0.6 to 1.5 ounces per square yard.

21 The composite **fabric** of claim 12, wherein the super absorbent **fibers** are about 5-1 00 microns in diameter and about 0 0.50 inches long.

22 The composite **fabric** of claim 12, wherein the super absorbent **fibers** absorb about 200-300 grams of water per gram of **fiber** . I 0 23. The composite **fabric** of claim 12, wherein the super absorbent **fibers** exhibit water retention rates at 0.5 PSI of 160-250 grams of water per gram of **fiber** .

24 The composite as in claim 1, further comprised of an accessory layer bonded to...

...composite as in claim 24, wherein the accessory layer adds resilience, insulation, windproofing, water resistance, **abrasion** resistance, **moldability** and or decoration to the composite.
26 A compositcas in claim 1, further comprised of...

34/3,K/57 (Item 57 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00369290
Unitized sanitary napkin .
Vereinheitlichte Monatsbinde.
Serviette hygienique integree.
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PATENT (CC, No, Kind, Date): EP 359501 A2 900321 (Basic) ≡(US)5466232
EP 359501 A3 910529
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APPLICATION (CC, No, Date): EP 89309195 890911;
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Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPBBF1	776
CLAIMS B	(English)	EPBBF1	820
CLAIMS B	(German)	EPBBF1	753
CLAIMS B	(French)	EPBBF1	936
SPEC A	(English)	EPBBF1	9413
SPEC B	(English)	EPBBF1	9706
Total word count - document A			10189
Total word count - document B			12215
Total word count - documents A + B			22404

see all highlighted portions within

Unitized sanitary napkin .
INTERNATIONAL PATENT CLASS: **A61F-013/15**

...SPECIFICATION A3
UNITIZED SANITARY **NAPKIN**
This application is related to commonly assigned, copending patent applications Serial No. 242,271 (attorney...
...exudate. More particularly, the invention relates to absorbent structures which can be used in sanitary **napkins** , incontinence and wound **dressing** products and the like, which are unusually absorbent and retentive.
Background Of The Invention
Historically...

...of women's undergarments and outer garments during their menstrual periods. For example, large, bulky **pads** , which have high absorbency rates due to the use of hydrophilic materials such as wood...

...to discomfort and the staining of undergarments and outer clothing. Even more recently developed, thinner **pads** , which contain polymer

superabsorbent materials designed to aid in retaining fluid, have high failure rates. Furthermore, both types of **pads** tend to buckle and deform in an undesirable manner under pressure such that they cannot...

...channelled away from the absorbent. Although multiple longitudinal channels may be desired, most prior art **pads** merely buckle to create a few large voids, which is undesirable.

When resilient **material** is added to **pads** in order to prevent deformation, the **pads** become uncomfortable and extremely expensive to make. Further, bulky **pads** are not significantly more failure-proof than thinner **pads** .

It is, therefore, an object of this invention to provide a sanitary protection product capable...

...quantities of body fluid.

It is another object of that invention to provide a sanitary **napkin** capable of absorbing menstrual fluid quickly and efficiently and retaining that fluid in the absorbent structure of the **napkin** so as to limit failure.

Yet another object of this invention is to provide a sanitary **napkin** which is flexible and conformable, yet resistent to bunching and twisting.

Additional objects of this...

...the layers are unitized by deposit in sequence, one on the other, in a continuous **fiber** deposition process, with transition areas thus being created between the layers. Irrespective of the degree...

...remainder of the peripheral area may be adhesively sealed.

This invention also relates to sanitary **napkins** which can be constructed using the absorbent structure of this invention. Preferably, a sanitary **napkin** of this invention is composed of an absorbent system and a liquid impermeable barrier layer. The absorbent system preferably includes a bulky, high-loft, low density cover containing hydrophilic **fibers** , a fluid transfer layer adjacent the cover and an absorbent reservoir layer adjacent the liquid...

...In short, the absorbent structure of this invention is able to be useful in sanitary **napkin** products because it is attached to the wearer's undergarment under tension, which maintains its...

...stress situations.

The absorbent structure of this invention is also useful in infant and adult **diapers** , wound **dressings** and other products used to absorb body fluid. In the case of an incontinent device...

A sanitary **napkin** was prepared in accordance with Example 1, except that the reservoir layer was a pair...

...instead of a creped, partially-slit board. Upon testing for absorbent-related properties, the sanitary **napkin** of this example exhibited 0.06 g. of wetback fluid after wetting with 15 ml...

...165 g. wet. The dry bending test showed that the load required to deform the **pad** 0.5 cm was 33 g; to deform the **pad** 1.0 cm was 57 g; and to deform the **pad** 1.5 cm was 68 g. When wet, the load required to deform the **pad** 0.5 cm was 23 g; to deform the **pad** 1.0 cm was 28 g; and to deform the **pad** 1.5 cm was 30 g. The resilience compression test indicated that 2.86 kg of force was required to **compress** the dry **pad** and 0.94 g of force was required to **compress** the wet **pad** . 164 g. cm of torque were required to twist the dry **pad** 90(degree). 316 g. cm of torque were required to twist the **pad** 90(degree) when wetted. If this board were tenderized or partially slit or otherwise treated...

...materials which may be useful in the products of this invention were tested for water **permeability** by constructing a "plug" made of the cover **material** . The plug was applied and subjected to a pressure difference of about 0.17 psi...

...the direction of flow. K is a proportionality constant representing the flow conductivity of the **porous** medium with respect to the fluid.

An Enka(R) polyester **fiber** cover having a basis weight of about 0.6 oz/yd(sup 2), a density...

...0.035 g/cc and a thickness of 0.25" was Sample 1. A bicomponent **fiber** Enka(R) cover having a basis weight of about 0.63 oz/yd(sup 2) was tested as Sample 2. A 100% thermally bonded polypropylene **fiber** cover having a basis weight of about 0.53 oz/yd(sup 2), a density...

...invention, have extremely high fluid permeability, i.e. 60 ft(sup 3)/ft(sup 2)/ **min** .

Pore size determinations were made using Samples 1 and 3. The results of these determinations are...

...basis weight of about 3.3 oz/yd(sup 2), (or 110 g/m(sup **2**)) a density of 0.035 g/ **cc** and a thickness of 0.12" was tested as Sample X. The water permeability of Sample X was 34.0 ft(sup 3)/ft(**sup 2**)/ **min** .

Sample Y was 100% Kraft ground pulp web having a bsis weight of about 3 ...

...about 0.124". Sample Y had a water permeability of about 25.4 ft(sup **3**)/ft(sup 2)/ **min** .

Sample Z was a stabilized pulp web containing 80% pulp and 20% Pulpex* (thermally bonding **fibers** availabe commercially from Hercules Corp. ... of 0.119". Sample Z had a water permeability of about 17.7 ft(sup **3**)/ft(sup 2)/ **min** .

Samples X, Y and Z were also tested for wettability using a sink basket. Sample...

...For example, the absorbent system of this invention may be used in infant and adult **diapers** , adult incontinence devices, wound **dressings** and the like. (Table omitted) (Table omitted) (Table omitted) (Table omitted) (Table omitted) (Table omitted...

...SPECIFICATION exudate. More particularly, the invention relates to absorbent structures which can be used in sanitary **napkins** ,

incontinence and wound **dressing** products and the like, which are unusually absorbent and retentive.

Background Of The Invention

Historically...

...of women's undergarments and outer garments during their menstrual periods. For example, large, bulky **pads** , which have high absorbency rates due to the use of hydrophilic materials such as wood...

...to discomfort and the staining of undergarments and outer clothing. Even more recently developed, thinner **pads** , which contain polymer superabsorbent materials designed to aid in retaining fluid, have high failure rates. Furthermore, both types of **pads** tend to buckle and deform in an undesirable manner under pressure such that they cannot...

...led away from the absorbent. Although multiple longitudinal channels may be desired, most prior art **pads** merely buckle to create a few large voids, which is undesirable.

When resilient **material** is added to **pads** in order to prevent deformation, the **pads** become uncomfortable and extremely expensive to make. Further, bulky **pads** are not significantly more failure-proof than thinner **pads** .

EP-A-0 158 914 discloses an absorbent article having a cover layer, a transfer...

...quantities of body fluid.

It is another object of that invention to provide a sanitary **napkin** capable of absorbing menstrual fluid quickly and efficiently and retaining that fluid in the absorbent structure of the **napkin** so as to limit failure.

Yet another object of this invention is to provide a sanitary **napkin** which is flexible and conformable, yet resistent to bunching and twisting.

Additional objects of this...

...the layers are unitized by deposit in sequence, one on the other, in a continuous **fiber** deposition process, with transition areas thus being created between the layers. Irrespective of the degree...

...remainder of the peripheral area may be adhesively sealed.

This invention also relates to sanitary **napkins** which can be constructed using the absorbent structure of this invention. Preferably, a sanitary **napkin** of this ...layer. The absorbent system preferably includes a bulky, high-loft, low density cover containing hydrophilic **fibers** , a fluid transfer layer adjacent the cover and an absorbent reservoir layer adjacent the liquid...

...In short, the absorbent structure of this invention is able to be useful in sanitary **napkin** products because it is attached to the wearer's undergarment under tension, which maintains its...

...stress situations.

The absorbent structure of this invention is also useful in infant and adult **diapers** , wound **dressings** and other products used to absorb body fluid. In the case of an incontinent device...

...OF THE FIGURES

FIGURE 1 is a plan view illustrating one embodiment of the sanitary **napkin** of this invention. A portion of FIGURE 1 is broken away to illustrate the absorbent structure of the sanitary **napkin** .

FIGURE 2 is an exploded view of a cross-section of the sanitary **napkin** depicted in FIGURE 1. It shows the absorbent structure without adhesive bonding between the layers...

...of this invention.

FIGURE 4 is a plan view of one embodiment of the sanitary **napkin** of this invention.

FIGURE 5 is a plan view of another embodiment of this invention...

...contact, as by lamination or by continuous formation of respective layers through deposit of individual **fibers** . Also as used herein, the "capacity" of a given layer shall refer to its ability...

...as well as functional specifications (e.g., layer basis weight, fiber denier, pore size, thickness, **density** , **permeability** , wicking, holding capacity, etc.).

The cover layer is intended to substantially contact the body at the location at which fluid is being produced. In the case of a sanitary **napkin** , this would be the perineal area. The cover layer is preferably a relatively low density, bulky, high-loft nonwoven web **material** having a basis weight of between about 3.39 and 33.9 g/m(sup...

...should be about 17.0 g/m(sup 2) (0.5 oz/yd(sup 2)). **Fiber** staple length is preferably between about 1.3 and 5.1 cm (0.5 and...

...cm (1.5 inches). However, so long as the cover retains the appropriate bulk and **porosity** , staple length is not critical. The fiber denier is preferably between about 1 and 3.5. More preferably, the **denier** is between about 2.5 and 3.25. Most preferably, it should be about 3. The cover layer may be composed of only one type of **fiber** , such as polyester, or it may be composed of bicomponent or conjugate **fibers** having a low melting point component and a high melting point component. The **fibers** may be selected from a variety of natural and synthetic materials such as nylon, polyester, rayon, (in combination with other **fibers**), cotton acrylic **fiber** and the like and combinations thereof.

Bicomponent **fibers** may be made up of a polyester core and a polyethylene sheath. The use of appropriate bicomponent materials results in a fusible nonwoven **fabric** . Examples of such fusible **fabrics** are described in U.S. patent No. 4,555,430, issued November 26, 1985 to Mays. Using a fusible **fabric** increases the ease with which the cover layer may be bonded to the adjacent transfer...

...layer.

The cover layer preferably has a relatively high degree of wettability, although the individual **fibers** comprising the cover may not be particularly hydrophyllic. The cover **material** should also contain a great number of relatively large **pores** . This is because the cover layer is intended to absorb body fluid rapidly and transport it away from the body and the point of deposition. Preferably, the **fibers** which make up the cover layer should not lose their physical properties when they are ...deposition. Thus, the cover is preferably wettable, hydrophilic and porous. When composed of synthetic hydrophobic **fibers** such as polyester or bicomponent **fibers** , the cover may be treated with a surfactant to impart the desired degree of wettability...

...permeability of at least about 15.2 m(sup 3)/m(sup 2)/min (50 **ft** (**sup** **3**)/ft(sup 2)/ **min** .) at a pressure differential of 1.2 kPa (0.17 psi). More preferably the water...

...about 22.9 m(sup 3)/m(sup 2)/min (75 ft(sup 3)/ft(**sup** **2**)/ **min**).

Yet another important aspect of the cover layer is its ability to be

wetted. In a basket wettability test of a hydrophilic cover, in which 5 grams (g) of **material** is placed in a basket in a reservoir and the time for the basket to...

...the pulp of the next layer.

The cover layer, if it is composed of a **fabric** , should have a very low density, preferably less than about 0.10 g/cm(sup...

...The transfer layer may also be composed of a blend of wood pulp with thermoplastic **fibers** for the purpose of stabilizing the layer and maintaining its structure integrity. For example, polyolefin **fibers** with the appropriate length and strength, such as low density polyethylene (such as PULPEX*, available from Hercules Corp.), or bicomponent **fibers** having polyethylene or polyester cores and a lower melting polyolefin sheath may be used, or polypropylene, polyvinylacetate, or other polyolefin **fibers** or themoplastic pulp equivalents and the like. Blending such **fibers** with wood pulp or the like adds stability and integrity to the transfer layer **material** . The ratio of thermoplastic **fiber** to pulp is preferably about 1:99 to about 50:50. More preferably, the ratio should be between about 3:97 and about 20:80. The **fibers** of the transfer layer may range in length from about 0.03 mm (0.0117...

...for ground wood pulp to about 7.6 cm (3 inches) for the stabilizing thermoplastic **fibers** . Preferably, the **fibers** are between about 6.3 mm (0.25 inches) to about 2.54 cm (1...

...web of the transfer layer is intended to be stabilized by thermal bonding at the **fibers** ' points of contact, although **fiber** length is not critical so long as the strength and integrety of the web is...

...be at least about 3.7 m(sup 3)/m(sup 2)/min (12 ft(**sup** **3**)/ft(sup 2)/ **min** .) at 1.17 kPa (0.17 psi). This rate is relatively lower than that of ...

...of at least about 3.0 m(sup 3)/m(sup 2)/min (10 ft(**sup** **3**)/ft(sup 2)/ **min**).

The transfer layer should be quite wettable, with a basket sink time of less than about 2 **seconds** . When constructed of stabilized wood pulp as hereinafter described, the typical pore size distribution of...

...may also be made in a unitized manner by the use of varying density pulp **fibers** which may be laid, compressed and allowed to decompress. The heaviest density materials will remain...

...wicking as the cover layer and the transfer layer. The basket sink time of the **material** of the reservoir layer may be as high as 5.0 seconds. Preferably, the reservoir...

...density of between about 0.20 g/cm(sup 3) and 1.0g/cm(sup **3**) at 0.21 kPa (0.03 psi). The average **pore** size of the dry compressed reservoir layer prior to wettng should be about 0.5...made of swellable, initially compressed material, the pore sizes change upon exposure to water, thus **pore** size distribution and/or porosity information is given in wet and dry states.

The reservoir...

...September 12, 1988 (attorney docket No. J&J 1238). The absorbent structure is preferably **fabricated** from a calendered peat moss board having a fibrous component admixed therewith,as set forth...

...S. patent No. 4,473,440. The fibrous component is suitably a natural or synthetic **textile fiber** such as rayon, polyester, nylon, acrylic or the like, having a length of from about...

...when the absorbent board is passed between the rolls, alternate strips of the friable board **material** are displaced relative to one another in the plane of the board. The displacement is sufficient to disrupt the friable absorbent **material** of the board such as the peat moss or wood pulp and delineate the individual...

...effective surface area of the board as a result of the edges of the slit **material** being available to the fluid. The partial shearing also imparts directional absorbent capacity to the absorbent boards since fluid wicks preferentially along the slits in the longitudinal direction of the **material** . By orienting the slit **material** in the longitudinal direction of a sanitary **napkin** or **diaper** , the incidence of edge failure in such products is consequently reduced.

The fibrous component extending between an interconnecting adjacent strips of absorbent **material** permits the absorbent element to be transported, rolled and handled during processing and assembly of...most preferred embodiment of the reservoir layer, there are many other highly absorbent and retentive **material** systems which can be used in the reservoir layer. For example, pulp-superabsorbent systems such...

...layer of the product of this invention. Such absorbent structures contain a mixture of hydrophilic **fibers** such as wood pulp fluff and discrete particles of a water insoluble hydrogel such as...

...render it flexible and suitable for use in the products of this invention.

Melt blown **fiber** systems such as those described in U.S. Patent No. 4,100,324 (Anderson et...

...densified sugar cane pulp. In short, any highly-dense, highly-absorbent and highly-retentive absorbent **material** which can be made thin and flexible may function as **material** out of which acceptable reservoir layer may be made. The reservoir layer may be shaped...

...two-dimensionally according to the desires of the manufacturer. Such absorbent structures may differ in **density** , **pore** size and other physical characteristics from the above-described peat moss board, while nevertheless possessing...

...the layers were not bonded.

The absorbent structures of this invention are useful in sanitary **napkin** and other body fluid-absorbing products. The sanitary **napkin** products made in accordance with this invention are uniquely thin, flexible, absorbent and conformable yet resilient to stress exerted in the transverse, or x-direction when wet. Such sanitary **napkins** can be made to conform in shape to the crotch-portion of an undergarment. Preferably...

...any configuration known to those skilled in the art.

Due to their flexibility, the sanitary **napkins** of this invention conform to the changes in the three-dimensional shape of undergarments as ...

...form many fine longitudinal channels, or "fluting", which aid in fluid transport. Yet, the sanitary **napkins** of this invention are surprisingly resilient to stresses exerted in the transverse, or x-direction...

...area available for fluid uptake so as to substantially prevent failure.

In contrast, the sanitary **napkins** of the prior art tend to bunch or rope when worn, causing transverse creases and...which divert fluid from the central absorbent system and from which fluid leaks from the **pad** onto the wearer's undergarment or body. The sanitary **napkins** of this invention, however, are resilient to bunching or roping despite their ability to conform to the movements of the undergarment.

A preferred embodiment of the sanitary **napkin** of this invention is depicted in Figures 1 and 2. The sanitary **napkin** of this invention contains a high-bulk, high-loft cover layer 10. Immediately adjacent and ...

...to cover 10 is fluid transfer layer 20. Transfer layer 20 is composed of non- **woven** **fabric** of higher density than that of cover 10, as described above. Transfer layer 20 may...

...applied by printing. In the alternative, cover 10 and transfer layer 20 may contain thermoplastic **fibers** which can be exposed to heat and melted such that they form bonds between the...

...layer 30 is preferably shaped rectangularly and extends substantially along the longitudinal axis of the **napkin** . However, reservoir layer 30 preferably does not abut the longitudinal end 40 of cover 10...

...to substantially prevent end failure by obviating contact between the fluid-containing portion of the **napkin** and the end of the **napkin** , thus allowing fluid to flow to and remain in the reservoir layer, although this aspect is not critical. This construction is also preferred at the lateral sides 50 of the **napkin** . Optionally, reservoir layer 30 is adhesively bonded to impermeable barrier layer 70. Barrier layer 70 is bonded to cover layer 10 around the periphery of the **napkin** . Preferably, a thin peripheral seal is created between the edge of transfer layer 20 and...

...mechanical means, may be adhered using pressure sensitive adhesive or the like.

Optionally, the sanitary **napkins** of this invention have relatively small tabs 60 extending from their longitudinal sides. Such tabs...

...no more than about one-third the length of the lateral side 50 of the **napkin** , i.e. length a-a should be less than one-third of length b-b. These tabs should not have absorbent **material** from the reservoir or transfer layers extending across their surface, although the cover may optionally be coextensive with tabs 60. The function of the tabs is merely to secure the **napkin** to the undergarment at its lateral sides 50. Tabs 60 also aid in maintaining the **napkin** 's structural integrity in the x-direction when subjected to stress from thigh motion and fluid absorption. If cover **material** is coextensive with the tabs in order, it may assist in wicking fluid away from the side area and afford ease in processing.

The sanitary **napkins** of this invention may be attached to the crotch portion of the undergarment with adhesives...

...cross", or the like. Velcro attachments may be employed at the longitudinal ends of the **napkin** to attach it to the undergarment, or adhesive tabs may be placed at the sides and/or at the four corners of the structure. Alternatively, the sanitary **napkin** of this invention may be attached to a belt which encircles the waist of the wearer.

Figures 4 and 5 illustrate additional embodiments of the sanitary **napkins** of this invention. Figure 4 illustrates a **napkin** having

slightly rounded lateral ends. Figure 5 illustrates a **napkin** which does not have tabs at its longitudinal sides.

The sanitary **napkins** made in accordance with this invention should have little or no fluid strikeback, i.e. menstrual fluid, once absorbed, should not reappear on the surface of the **napkin** .

The thickness of the sanitary **napkins** of this invention measured in the z-direction should be no greater than about 0...

...no greater than about 1.0 cm (0.400 inch) when wet.

After the sanitary **napkin** of this invention is constructed and bonded together, the entire **pad** (or, optionally but less preferably, only the cover) may be embossed using a pattern which extends along the longitudinal axis of the **napkin** . Of course, the embossing pattern can be of any shape or conformation, such as straight...

...System as set forth in U.S. Patent No. 4,357,827) of the sanitary **napkins** of this inventions should be at least about 65 cc and, preferably, at least about...

...saline solution. The amount of force required to create the initial lateral deformation of a **napkin** of this invention should be no more than about 200 g when the **napkin** is dry and no more than about 250 g when the **napkin** is wet, although the force can exceed 400 g when dry if the reservoir layer...

...be made much more flexible when treated.

The degree of force needed to bend the **napkin** of this invention a distance of 1.5 cm in the z-direction should be...

...than about 30 g when wet.

The degree of torque needed to bend the sanitary **napkin** of this invention 90(degree) around its longitudinal, or y-axis should be no greater...

...in no way do these examples serve to limit this invention.

Example 1

A sanitary **napkin** in accordance with this invention was made by bonding together the following elements: (1) 100% Enka brand polyester fibrous nonwoven carded web the **fibers** having a denier of 3, a staple length of 3.8 cm (1.5 inches...

...with permeability. The cover and the polyethylene barrier were bonded around the periphery of the **napkin** using the adhesive and exposure to heat and pressure. The entire structure was laminated and...

...36-40. The resulting distribution is set forth in Table IA.

The components of the **napkins** of this Example were measured for wickability by placing them in a position 90(degree...

...somewhat wickable, while the reservoir layer is extremely wickable.

Example 2

The components of the **napkin** of Example 1 were measured in the z-direction and their densities calculated under four...

...of each layer are set forth in Table II. The total thickness of the sanitary **napkin** product of Example 1 at 0.21 kPa (0.03 psi) is about 0.4 cm (0.158 inches).

Example 3

The thickness of a sanitary **napkin** made in accordance with Example 1 was measured when dry under four pressures, 0.21...

...The Procter & Gamble Co., and STAYFREE* brand Minipads available from Personal Products Co. These **pads** were then totally saturated with water, and their thicknesses again measured at various pressures. The...

...test measured dry z-direction deformability and wet collapse due to pressure. Full-period protection **pads** are considerably thicker than those of Example 1, both when wet and dry. The STAYFREE...

...Maxipads tend to collapse when wet, as can be seen from Table III. However, the **pads** of Example 1 swell and retain their structure when wet.

Example 4

A Gravimetric Absorbency...measures the amount of force needed in the x-direction to begin to deform a **pad** , was performed in order to determine the x-direction resistance to deformation of various sanitary protection products. In this test, the sanitary **napkin** was held in a vise-like structure as illustrated in Figure 6. The vise-jaws...

...50 mm/min. and the force required to first produce a bend in the sanitary **napkin** was measured using an Instron tester(Tensile and Compression Tester). The measurements were first made...

...products. Fifteen cc of ersatz menstrual fluid was then deposited in the center of the **napkins** and they were tested again. The results of this test are set forth in Table V. Table V shows that, in dry side compression tests, the sanitary **napkin** of Example 1 is relatively easy to deform initially and would tend, therefore, to be...

...apart. Each arm is 0.6 cm thick. Head 65 is brought downward against the **napkin** to deform it at a rate of 50 mm/min. Various **napkins** were tested both in a wet and a dry state. The deformation distance is measured...

...7

A resilience-compression test was performed in order to determine the conformability of the **napkins** of Example 1. Results of this test indicate that the products of this invention are considerably more conformable and flexible both wet and dry than any other commercial **pad** tested. Convex, thigh-shaped forms 70 were positioned at the longitudinal sides of each **napkin** 75 without exerting force on the **napkin** as depicted in Figure 9. The initial force needed to **compress** the dry **napkin** at a head speed of 14 cycles/min. from 6.35 cm (2.5") to...

...Tester. Then, 15 cc of ersatz menstrual fluid was deposited on the middle of the **pad** and the compression motion continued. The results of this test are set forth in Table VII. In all **pads** except those made in accordance with Example 1, there was a drop in the amount of force required to **compress** the **napkin** without crushing it. In the case of the **pads** of Example 1, the product exhibits an increase in compressive resistance when wet. All other products exhibit a decrease in compressive resistance. Thus, the **napkin** of this invention is flexible, yet remains resilient when wet.

Example 8

A torsion test was performed to determine the torque required to twist a **napkin** around its longitudinal axis 90(degree) both in a wet and a dry state. The **napkin** of Example 1 demonstrated the ability of retaining its resiliency and, in fact, increasing it, when wet. The **napkins** were clasped into a wire vise at each longitudinal end as depicted in Figure 7...

...of which rested upon a scale. The other extension could be used to twist

the **napkin** in a clockwise direction 90(degree) around its longitudinal axis. The scale indicates the force required to twist the **napkin** . As shown in Table VIII, the **napkin** of Example 1 required considerably more force to twist it when wet than when dry. This indicates that the **napkin** actually becomes considerably more resilient when wet and will tend to resist bunching and roping...

...a wetback test was performed. Fifteen cc of ersatz menstrual fluid was deposited on a **napkin** in its center. After 15 minutes, a circular piece of NU- **GAUZE** * nonwoven rayon **fabric** commercially available from Johnson & Johnson Ltd. 4.5 cm in diameter was placed over the location at which the fluid was deposited. A plastic sheet was placed over the **napkin** and a 500 g weight also 4.5 cm in diameter was placed over the **gauze** for 5 minutes. After 5 minutes, the weight, plastic and **gauze** was removed, the **gauze** weighed and the volume of fluid absorbed by the **gauze** determined. The **napkin** made in accordance with Example 1 allowed the least amount of fluid to rewet the **gauze** . The results of this test are set forth in Table IX.

Example 10

An impact capacity test was performed on several sanitary **napkins** ; including a **napkin** made in accordance with Example 1. The **napkins** were held in a 45 degree angle to the horizontal plane. Twenty-five cc of ersatz menstrual fluid was deposited onto the angled **napkins** . The **napkins** were each weighed to determine the amount of fluid retained. A STAYFREE(TM) brand regular maxipad having a modified entangled **fiber** polyester cover retained 4 cc; a STAYFREE(TM) brand regular maxipad having an apertured fibrous cover (26 apertures per square cm; 165 apertures per square inch) retained 13 cc; a **napkin** made according to Example 1 retained 22 cc; an ALWAYS(TM) brand maxipad retained 25...

...and a SURE & NATURAL(TM) brand Maxishield retained 17 cc.

Example 11

A sanitary **napkin** was prepared in accordance with Example 1, except that the reservoir layer was a four...

...rather than a partially slit, creped board. Upon testing for absorbent-related properties, the sanitary **napkin** of this example exhibited only trace amounts of wetback after wetting with 15 ml of...

...207 g. wet. The dry bending test showed that the load required to deform the **pad** 0.5 cm was 15 g; to deform the **pad** 1.0 cm was 24 g; and to deform the **pad** 1.5 cm was 26 g. When wet, the load required to deform the **pad** 0.5 cm was 37 g; to deform the **pad** 1.0 cm was 47 g; and to deform the **pad** 1.5 cm was 51 g. The resilience-compression test indicated that 0.59 kg of force was required to **compress** the dry **pad** and 0.55 g. of force was required to **compress** the wet **pad** . 282 g. cm of torque were required to twist the **pad** 90(degree) when wetted.

Example 12

A sanitary **napkin** was prepared in accordance with Example 1, except that the reservoir layer was a pair...

...instead of a creped, partially-slit board. Upon testing for absorbent-related properties, the sanitary **napkin** of this example exhibited 0.06 g. of wetback fluid after wetting with 15 ml...

...165 g. wet. The dry bending test showed that the load required to deform the **pad** 0.5 cm was 33 g; to deform the **pad** 1.0 cm was 57 g; and to deform the **pad** 1.5 cm was 68 g. When wet, the load required to deform the **pad** 0.5 cm was 23 g; to deform the **pad** 1.0 cm was 28 g; and to deform the **pad** 1.5 cm was 30 g. The resilience compression test

indicated that 2.86 kg of force was required to **compress** the dry **pad** and 0.94 g of force was required to **compress** the wet **pad** . 164 g. cm of torque were required to twist the dry **pad** 90(degree). 316 g. cm of torque were required to twist the **pad** 90(degree) when wetted. If this board were tenderized or partially slit or otherwise treated...

...materials which may be useful in the products of this invention were tested for water **permeability** by constructing a "plug" made of the cover **material** . The plug was applied and subjected to a pressure difference of about 1.17 kPa...

...the direction of flow. K is a proportionality constant representing the flow conductivity of the **porous** medium with respect to the fluid.
An Enka(R) polyester **fiber** cover having a basis weight of about 20.3 g/m(sup 2) (0.6...

...cc and a thickness of 0.635 cm (0.25") was Sample 1. A bicomponent **fiber** Enka(R) cover having a basis weight of about 21.4 g/m(sup 2...

...63 oz/yd(sup 2)) was tested as Sample 2. A 100% thermally bonded polypropylene **fiber** cover having a basis weight ...permeability, i.e. 18.3 m(sup 3)/m(sup 2)/min (60 ft(sup **3**)/ft(sup 2)/ **min**).
Pore size determinations were made using Samples 1 and 3. The results of these determinations are...

...water permeability of about 7.7 m(sup 3)/m(sup 2)/min (25.4 **ft** (**sup 3**)/ft(sup 2)/ **min**).
Sample Z was a stabilized pulp web containing 80% pulp and 20% Pulpex* (thermally bonding **fibers** availabe commercially from Hercules Corp. Sample Z had a basis weight of about 3.3...

...water permeability of about 5.4 m(sup 3)/m(sup 2)/min (17.7 **ft** (**sup 3**)/ft(sup 2)/ **min**).
Samples X, Y and Z were also tested for wettability using a sink basket. Sample...

...For example, the absorbent system of this invention may be used in infant and adult **diapers** , adult incontinence devices, wound **dressings** and the like. (see image in original document) (see image in original document) (see image...

...CLAIMS to any preceding claim wherein said cover layer comprises a bulky, high-loft nonwoven web **material** having a basis weight of between about 0.1 and 1.0 oz/yd(sup...

...transfer layer has a water permeability of at least 10 ft(sup 3)/ft(sup **2**)/ **min** . at 0.17 psi.
11. An absorbent structure according to any preceding claim wherein said...

...tampon comprising the absorbent structure of any of claims 1 to 14.
17. A wound **dressing** comprising the absorbent structure of claims 1 to 14.
18. An absorbent structure according to...

...layer having an outer surface and an inner surface comprising a web of substantially hydrophylic **fibers** , the outer surface of said transfer layer being bonded to the inner surface of said...

...fluid reservoir layer having an outer surface and an inner surface

comprising a substantially hydrophilic **material** having a fluid holding capacity of at least about 7.5 grams of saline per gram of absorptive **material** , the outer surface of said fluid reservoir layer being bonded to the inner surface of...

...CLAIMS any preceding claim wherein said cover layer (10) comprises a bulky, high-loft nonwoven web **material** having a basis weight of between about 3.39 and 33.9 g/m(sup...

...water permeability of at least 3.0 m(sup 3)/m(sup 2)/min (10 **ft** (**sup 3**)/ft(sup 2)/ **min**) at 1.17 kPA (0.17 psi).

11. An absorbent structure according to any preceding...

...tampon comprising the absorbent structure of any of claims 1 to 14.

17. A wound **dressing** comprising the absorbent structure of claims 1 to 14.

18. A unitized absorbent structure according...

...20) has an outer surface and an inner surface comprising a web of substantially hydrophilic **fibers** , the outer surface of said transfer layer being bonded to the inner surface of said...

...reservoir layer (30) has an outer surface and an inner surface comprising a substantially hydrophilic **material** having a fluid holding capacity of at least about 7.5 grams of saline per gram of absorptive **material** , the outer surface of said fluid reservoir layer being bonded to the inner surface of...

34/3,K/6 (Item 6 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00436278 **Image available**
METHOD AND SYSTEM FOR MAKING AN ABSORBENT PAD FOR USE IN ABSORBENT ARTICLES
PROCEDE ET SYSTEME DE FABRICATION D'UN REMBOURRAGE ABSORBANT POUR ARTICLES ABSORBANTS

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METHOD AND SYSTEM FOR MAKING AN ABSORBENT PAD FOR USE IN ABSORBENT ARTICLES
PROCEDE ET SYSTEME DE FABRICATION D'UN REMBOURRAGE ABSORBANT POUR ARTICLES ABSORBANTS

Main International Patent Class: **A61F-013/15**
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English Abstract
Methods and systems for making an absorbent **pad** for use in an absorbent article utilize a forming device for forming **material** into an absorbent core, a supply device for supplying a containment layer against the first surface of the absorbent core and spray apparatus for spraying **fibers** of molten resin onto the second surface of the absorbent core. The **fibers** form a stabilization layer on the absorbent core that increases the integrity of the absorbent...

...and multiple gas apertures for exhausting gas therefrom to provide a random pattern to the **fibers** of molten resin as the **fibers** are sprayed onto the second surface. Resin can also be sprayed onto first and second...

French Abstract

...sur la premiere surface du noyau absorbant, et enfin, un appareil pulverisant pour vaporiser les **fibres** de la resine fondue sur la seconde surface du noyau absorbant. Les **fibres** forment une couche de stabilisation sur le noyau absorbant augmentant ainsi son integrite. L'appareil...

...et d'autres ouvertuers pour evacuer les differents gaz et donner un motif aleatoire aux **fibres** de la resine fondue au moment ou les **fibres** sont pulverisees sur la seconde surface. On peut egalement vaporiser la resine sur les premiere...

Detailed Description
METHOD AND SYSTEM FOR MAKING AN ABSORBENT **PAD** FOR USE IN ABSORBENT ARTICLES
5
FIELD OF THE INVENTION
Absorbent articles such as infant **diapers** , training pants, adult incontinence products, and the like are well known. Such articles have achieved...

...10
BACKGROUND OF THE INVENTION
In general, absorbent articles are formed by multiple webs of **material** . Such webs generally include a bodyside liner and outer cover on opposing outside surfaces of...core

20
European Patent Application 0 685 213 A2 published Dec. 6, 1995 discloses depositing **fibers** onto one surface of absorbent core **material** to provide a cover. Once the cover of **fibers** has been deposited and adhered to the absorbent core **material** , the absorbent core is spirally **wound** and radially compressed to form a tampon. The **fibers** at least partially adhere to the surface of the absorbent core **material** onto which they are
deposited. The **fibers** form an outer cover on the absorbent **material**

U.S. Patents 5,227,107 and 5,409,768 to Dickenson et al disclose...

...The Dickenson et al teachings include meltspraying polymer into the forming chamber, along with other **fibers** , to form an absorbent core. The meltsprayed polymer is mixed with the absorbent **fibers**
1
SUBSTITUTE SHEET (rule 26)
and forms an absorbent structure including meltsprayed **fibers** dispersed internally in the
absorbent core

SUMMARY OF THE DISCLOSURE
The present invention relates to methods and systems for making absorbent **pads** for use in absorbent articles. Opposing surfaces of an absorbent core are supported by a preformed containment layer and a stabilization layer of resin **fiber** . More particularly, the methods include forming an absorbent core of **material** in a forming device, applying the pre-formed containment layer against a first surface of the absorbent core, and depositing the stabilization layer comprising resin **fiber** onto a second surface of the absorbent core. The resin **fiber** interacts with the absorbent core at the second surface to increase the integrity of the...

...can be devoid of the step of joining a second previously-formed containment

layer with **material** on the second surface of the absorbent core

In preferred embodiments, resin **fibers** are deposited onto the second surface of the absorbent core in a random pattern while the **fibers** are in such condition that properties of the **fibers** contribute to securement of the **fibers** to the absorbent core at the second surface. The resin **fibers** can comprise polyolefins, such as polypropylene

In some embodiments, the resin **fiber** is deposited onto the second surface of the absorbent core using a spray nozzle assembly...

...the width of the formed absorbent core. The plurality of nozzles can apply the resin **fiber** across a width, of the absorbent core, of from ...to about 10 inches. Each nozzle preferably includes a single resin aperture exhausting the resin **fiber** therefrom, and multiple gas apertures directing the resin **fiber** exhausted therefrom toward the absorbent core, and imparting a random pattern to each such **fiber**

In some embodiments, the resin **fibers** may be deposited onto the second surface in such condition that some of the **fibers** bond to the absorbent core at the second surface, and to each other at resin **fiber** crossing points. The resin **fiber** directed toward the absorbent core can comprise a spray of molten **fibers**

2
SUBSTITUTE ...on a rotating forming drum of the forming device and thereby assisting in drawing absorbent **material** toward the drum in the step of forming the dbsorbent core

In most embodiments, the...

...stabilization layer, is severed at spaced locations along the length thereof, to form individual absorbent **pads** . The absorbent **pad** is mounted to a bodyside liner, such that the containment layer is located between the bodyside liner and the absorbent **pad** . An outer cover is mounted to the second surface of the absorbent **pad** , such that the stabilization layer is located between the absorbent **pad** and the outer cover
In some embodiments, the containment layer has first and second edge portions extending outwardly from the first and second opposing edges of the absorbent core. The **fibers** of the stabilization layer are deposited onto at least part of the first and secon edge portions of the containment layer while the **fibers** are in condition to contribute to securement of the **fibers** to the containment layer. The **fibers** become secured to the containment layer, and subsequent cooling of the **fibers** causes the **fibers** to lose their securement characteristic, while retaining securement to the containment layer. The containment layer...

...stabilization layer can entirely encompass the absorbent core

20
Another embodiment includes a system for **fabricating** an absorbent **pad** comprising a forming device for forming **material** into an absorbent core, a supply device for supplying a pre-formed containment layer against the first surface of the absorbent core, and spray apparatus for spraying **fibers** of molten resin onto the second surface of the absorbent core, thereby depositing a stabilization layer onto the second surface such that the resin **fibers** interact with the absorbent ... comprise a continuous absorbent sausage, the absorbent

sausage being a continuous air formed layer of **fiber**
In some embodiments, the forming device includes a **fiberizer** , a forming chamber and a rotatable forming drum, preferably a vacuum forming drum, for forming the absorbent core. ' The forming device can also include a scarfing roll for shaving **material** to reduce the thickness of the absorbent core

In some embodiments, the spray apparatus includes...molten resin toward the second surface of the absorbent core as a spray of molten **fibers**

10
In some embodiments, the system includes a vacuum transfer device for receiving the absorbent...

...severs the absorbent sausage, including the containment layer and stabilization layer, to form respective absorbent **pads** ›

In preferred embodiments, a main tacker secures each respective absorbent **pad** between a respective bodyside liner and a respective outer cover, the stabilization layer being adjacent...
...from first and second opposing edges of the absorbent core. The spray apparatus deposits resin **fiber** onto at least part of the first and second portions of the containment layer such that the resin **fiber** interacts with the containment layer, thereby contributing to securement of the resin **fiber** to the containment layer

35
4
SUBSTITUTE SHEET (rule 26)
In another embodiment, the system...

...bodyside liner and the first surface of the absorbent core. A stabilization layer of resin **fiber** is disposed between the absorbent core and the ...to increase the integrity of the absorbent core

In most embodiments, the stabilization layer comprises **fibers** deposited on the second surface in a random pattern, properties of the **fibers** contributing to securement to the second surface. The **fibers** are typically secured to each other at crossover points. The **fibers** can comprise polymeric **material**
In some embodiments, the containment layer has first and second portions extending outwardly from opposing...In most embodiments, the containment layer comprises barrier tissue and the stabilization layer comprises a **material** that is not generally considered to be an adhesive

In another embodiment a narrow second that the molten **fibers** of the first and second stabilization layers can contact the second containment layer and the...

...BRIEF DESCRIPTION OF THE DRAWINGS
FIGURE 1 shows diagrammatically a system for making an absorbent **pad** of the invention for use in an absorbent article

5

SUBSTITUTE SHEET (rule 26)
FIGURE...spray nozzle
assembly, as viewed from the vacuum transfer device

FIGURE 6 shows the resin **fiber** output end of a single nozzle useful in the invention
FIGURE 7 shows a second embodiment of systems of the invention for making an
absorbent **pad**

FIGURE 8 shows a top view of a length of an absorbent sausage, taken at
...FIGURE 14 shows a top view of a completed absorbent article made with an absorbent
pad of the ...ILLUSTRATED EMBODIMENTS
The present invention is directed toward methods and systems for making an absorbent **pad** for use in an absorbent article. An exemplary method replaces forming tissue with sprayed molten...

...article while reducing the cost of
production

FIGURE 1 shows a first system 8 for **fabricating** an absorbent core. System 8 includes a **fiberizer** 10, contained in a forming chamber 12 for receiving absorbent **material** , and a forming drum 14 which rotates, generally continuously, in the direction of arrow 15. System 8 also includes a scarfing roll 16. Scarfing roll 16 shaves excess absorbent **material** from an absorbent sausage 20 formed by forming drum 14. A vacuum transfer device 32...compressed gas to spray nozzle assembly 38. A spray nozzle assembly 38 sprays a resin **fiber** 40 onto a second surface 36 of absorbent sausage 20 to form a stabilization
layer 65

In the context of the invention, "absorbent sausage" refers to any absorbent **material** or combination of absorbent materials having a generally continuous length, and can also
include superabsorbent materials

"Absorbent **pads** " refers to cut lengths of the absorbent sausage, including containment layer 30 and stabilization layer **material** used for forming the absorbent sausage, but does not include any stabilization layer or
containment...

...a path leading absorbent sausage 20 toward further
processing stations not shown in FIGURE 1

Fiberizer 10 **fiberizes** absorbent **material** in forming chamber 12. Thus **fiberizer** 10 breaks up boards of **fiber** **material** to form individualized fluff. Absorbent sausage 20 comprises a matrix of generally hydrophilic **fibers** , such as a web of cellulosic fluff, preferably in combination with a particulate high-absorbency **material** commonly known as superabsorbent **material** . In a particular embodiment, absorbent sausage 20 comprises a mixture of superabsorbent hydrogel-forming particles and wood pulp fluff **fibers** . In place of the wood pulp fluff, one may use any of a variety of synthetic **fibers** , a combination of synthetic **fibers** , or a combination of synthetic **fibers** and natural **fibers** . At
8
SUBSTITUTE SHEET (rule 26)
least part of the absorbency of the absorbent **material** can also be

derived from capillary action resulting from the arrangement of **fibers** with respect to each other. Absorbent sausage 20 preferably does not contain any meltsprayed polymeric **material** internal to its structure. Absorbent sausage 20 preferably comprises a continuous layer of air formed
fiber

Forming drum 14 forms absorbent sausage 20 using gravity, and a vacuum chamber (not shown of forming drum 14, assists in drawing absorbent **material** onto the forming surface of the drum. The amount of vacuum supplied by the vacuum...32
25
While FIGURES 1-3 show absorbent sausage 20 as a continuous web of **material** , absorbent cores of absorbent **material** 18 can also be formed as separate individual cores on forming drum 14. Such an...present. An exemplary barrier tissue has a basis weight of 12.5 pounds/ream, a **porosity** of approximately 90 **cubic** **feet** per **minute** per **foot** **squared** , and
...32 supports absorbent sausage 20, spray nozzle assembly deposits molten and/or semi-molten resin **fibers** 40 onto opposing second surface 36 of absorbent sausage 20, thereby forming stabilization layer 65. FIGURE 2 shows spray nozzle assembly 38 applying resin **fiber** 40 along a continuous length of a middle section of absorbent sausage 20 between opposing...

$90 ft^3$ ~~per minute~~

$90 ft^3/min/ft^2$

at least
$50 ft^3/min/ft^2$

Second pre-formed containment layer 181 can have a width from about 2.5 **inches** to about 9 **inches** . An exemplary forming tissue has a **porosity** of approximately 400 **cubic** **feet** per **minute** per **foot** **squared** , and dry strength of about 730 grams

20

Spray nozzle assembly 138 in FIGURE 10 deposits resin **fibers** 140 onto absorbent sausage 120, second containment layer 181 and first and second portions 172...off, especially in a meltspray system, such that a first stabilization layer 165A of resin **fibers** 140 is applied to absorbent sausage 120 between outside edge 166 of absorbent sausage 120...

...formed containment layer 181. Other nozzles of spray nozzle assembly 138 can simultaneous spray resin **fiber** 140 onto absorbent sausage to form a second stabilization layer 165B between outside edge 168...sausage 120 in surface-to-surface relationship with second containment layer need not have resin **fibers** 140 sprayed thereon. In some embodiments, adhesive can be applied to second containment layer 181...

...FIGURE 11A, individual nozzles of spray nozzle assembly 138 can be controlled such that resin **fibers** are deposited onto first and second portions 172, ...deposited on absorbent sausage 120. Further, individual nozzles can also be controlled such that resin **fibers** are deposited in contact with second containment layer 181 proximate outside edges 183, 185 thereof...

...can be surrounded by containment layers 130, 181 and stabilization layers 165A, 165B of resin **fiber** **material** . Such an arrangement stabilizes the fluff **material** of absorbent sausage 120 and improves the integrity thereof

Surprisingly, the arrangement of FIGURES 10 significantly reducing cost of the absorbent articles by reducing the amount of containment layer **material** , such as forming tissue, needed to manufacture the absorbent article

34/3,K/24 (Item 24 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01408772
Durable, comfortable, air- permeable **allergen-barrier** fabrics
Dauerhafte, bequeme und luftdurchlassige antiallergene Gewebe
Tissus durables et confortables, permeables a l'air et faisant barriere aux allergenes
PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 1190652 A2 020327 (Basic)
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Total word count - document B			0
Total word count - documents A + B			4520

Durable, comfortable, air- permeable **allergen-barrier** fabrics
PATENT ASSIGNEE:
PRECISION **FABRICS** GROUP, INC...

...ABSTRACT A2
An allergen-barrier **fabric** includes a tightly-constructed **fabric** substrate, **woven** from 0 to 45% continuous synthetic filament yarns and 55 to 100% natural or synthetic spun yams. The **fabric** substrate is finished to produce a **fabric** with a mean **pore** size of 4 to 10 microns, an air **permeability** of 0.5 - 25 cfm, a mean **fabric** flexibility of 0,5 to 6.5 grams (bending resistance), and a moisture vapor **permeability** in excess of 800 g/m2)/24 hours. This **fabric** provides a barrier to mite-induced allergen particles. Various additional finishes can be included on the **fabric** . For example, an antimicrobial finish may be provided on the **fabric** to extend **fabric** wearlife by providing protection against **mold** and mildew. As another alternative, a fluorochemical finish can be provided to extend **fabric** wearlife by providing protection against fluid stains.

...SPECIFICATION application No. 09/165,287, filed October 2, 1998.
This invention relates to allergen-barrier **fabrics** that are durable,

air- **permeable** , and comfortable, The **fabrics** according to this invention have improved softness and feel while still providing an allergen barrier...

...substantially impedes and/or stops passage of dust, dust mites, and other allergens through the **fabric** .

BACKGROUND OF THE INVENTION

A major source of indoor allergy-causing proteins are dust mites...

...to be an effective barrier to dust, dust mites, and their allergy-causing particles, a **fabric** or **material** must limit the transmission of 10 micron particles through its planar surface. These facts are...

...typically have 25% of their weight made up of dust, dust mites, and allergen. Sofa **cushions** , chair **cushions** , carpets, and other foam or **fiber** filled articles also provide a suitable habitat for dust mites. In effect, every home contains...

...because they form an impervious film (as with the laminates) or because they are "tightly **woven** " (as with 300-count cotton sheeting) or because they have a pore size that is...

...noises when a person moves on the sheet or pillow). Additionally, while vinyl, polyurethane, and **microporous** coated **fabrics** are considered excellent barriers to allergens, they require venting when used as pillow or mattress...

...deflate and re-inflate when compressed, unless they are vented. The need to vent these **fabrics** , however, begs the question of whether they can be considered effective allergen barriers (as allergens can also enter and escape through the vents). Coated and laminated **fabrics** also tend to have a limited wearlife due to coating delamination.

Uncoated cotton sheetings, although...

...bedding products on a weekly basis. Such practices, however, only serve to further enlarge the **pore** size of cotton sheetings as **fiber** is lost with extended laundering.

Spunbond/meltblown/spunbond (SMS) polyolefin nonwovens used in mattress and...

...is very short, particularly with hot laundering temperatures normally used by allergy sufferers. SMS nonwoven **fabrics** also have a significantly stiffer and harsher hand as compared with standard pillow tickings.

Other...

...4,822,667 issued to Goad et al. describes a reusable, launderable, sterilizable medical barrier **fabric** **woven** from 100% polyester **fiber** constructed of polyester yam. This **fabric** is said to be blood and aqueous fluid transmission resistant, **abrasion** resistant, flame resistant, lint free, drapable, and sufficiently **porous** to eliminate heat build-up. The described **material** is used in medical garments, **wraps** , and sterilizable articles. This patent does not describe the use of the **fabric** as an allergen barrier. The Goad patent is entirely incorporated herein by reference.

U.S...water vapor. As noted above, this patent is entirely incorporated herein by reference. The cover **material** described in this patent is made of Baxenden Witcoflex 971/973 type polyurethane-coated **woven** polyester or nylon **fabric** . This **fabric** is not air **permeable** ; however, it does have a moisture vapor transmission ("MVT") rate of 2,500

to 7,000 g of water/m2)/day. Typically, the coated side of the **fabric** is on the inside of the sewn cover, and the seams are sealed. This product...

...No. 5,368,920 issued to Schortmann (International Paper Co.) describes a nonporous, breathable barrier **fabric** and related methods of manufacture. The **fabric** is a breathable barrier **fabric** created by filling void spaces in a **fabric** substrate with film-forming clay-latex **material** having a **density** range of 1,000 to 2,000 gm/l, to provide a barrier **fabric** **permeable** to water vapor and impermeable to liquids and air. The MVT rate ranges from 300...

...and other protective coverings. Again, this product has the disadvantages associated with coated and laminated **fabrics** , as described above.

Dancey, in U.S. Patent No. 5,321,861, describes a protective cover for upholstered or padded articles, such as bedding, made from a **microporous** ultrafilter **material** having a **pore** size of less than 0.0005 mm. This **material** suppresses passage of fecal particles produced by house dust mites. To prevent particles from bypassing the ultrafilter **material** , the seams of the cover are welded, and its opening is sealed by a resealable...

...object of this invention to overcome the various disadvantages of the known allergen and barrier **fabric** materials and to provide a **fabric** that is soft and comfortable, but still provides an effective barrier against transmission of dust, dust mites, their excrement, and other allergens.

According to this invention, an allergen-barrier **fabric** includes a tightly-constructed **fabric** substrate, **woven** from continuous natural and/or synthetic filament and/or spun yarns. The **fabric** substrate is finished so as to provide a **fabric** with a mean **pore** size of 4 to 10 microns, an air **permeability** of 0.5 - 25 **cubic** **feet** per **minute** per **square** **foot** of **fabric** at 0.5 **inches** of water ("cfm," measured by Federal Test Method Standard (FTM) 5450, also known as ASTM D-737), a mean **fabric** flexibility of 0.5 to 6.5 grams (bending resistance), and a moisture vapor permeability in excess of 800 g/m2)/24 hours. These specifications relate to the finished **fabric** , prior to regular use and laundering. With these specifications, the resultant **fabric** is soft and comfortable while still providing a barrier to mite-induced allergen particles.

In a preferred embodiment of the invention, the allergen-barrier **fabric** has a maximum initial **pore** size of 10 microns.

Various **fabric** finishes can be included on the allergen-barrier **fabric** of the invention. For example, the allergen-barrier **fabric** can include an antimicrobial finish to extend **fabric** wearlife by providing protection against **mold** and mildew. As another example, the allergen-barrier **fabric** of the invention also can include a fluorochemical finish to extend **fabric** wearlife by providing protection against fluid stains. These additional finishes can be used individually, in...

...mattress by covering the pillow or mattress with a tightly-constructed, non-coated, non-laminated **fabric** . The **fabric** , as noted above, is **woven** from continuous natural and/or synthetic filament and/or yams and finished to a **fabric** with a mean **pore** size of 4 to 10 microns, an air **permeability** of 0.5 - 25 cfm, a mean **fabric** flexibility of 0.5 to 6.5 grams (bending resistance), and a moisture vapor **permeability** in excess of 800 g/m2)/24 hours. This **fabric** provides a barrier to mite-induced allergen particles.

In this invention, the allergen-barrier cover **material** can take on any suitable form. For example, it can be a pillow ticking, a pillow cover, a mattress ticking, a mattress cover, a mattress **pad** , a duvet cover, or a bedspread. Furthermore, while it is preferred that the allergen-barrier **fabric** according to the invention cover all surfaces of the pillow or mattresses so as to...

...pillow or mattress, this is not a requirement in all embodiments. For example, typical mattress **pads** do not completely encase a mattress.

DETAILED DESCRIPTION OF THE INVENTION

This invention relates to an allergen-barrier **fabric** that possesses a unique combination of properties to provide an allergen-barrier **material** that is superior to other commercially available products. The **fabric** according to the invention has a unique combination of air **porosity** (to allow venting through the **fabric** 's planar surface), moisture vapor transport (to enhance a user's comfort), **fabric** flexibility (also a comfort-enhancing property), extremely small **pore** size (to filter out allergens), and durability to laundering (as required of allergy-relief products) to provide that superior product. This combination of properties is provided by **weaving** fine-denier synthetic filament yams into a tight plain- **weave** construction with post finishing processes that maximize **fiber** coverage and filtration efficiency, In effect, the **fabrics** according to the invention provide the barrier performance of coated or laminated **fabrics** , while exhibiting the flexibility, air **porosity** , and moisture-vapor **porosity** needed to enhance comfort and "refluffability" of **fiber** -filled products, and while also offering a durability not possible with nonwoven or coated/laminated **fabrics** .

The **fabric** **material** according to the invention can be used for any suitable purpose, but it is preferably used as a **fabric** for covering items that typically are susceptible to dust mite infestation. As noted above, pillows and mattresses provide a very favorable environment for sustaining dust mite colonies. Therefore, advantageously, the **fabric** according to the invention can be used for pillow tickings, pillow covers, mattress **pads** , mattress tickings, mattress covers, duvet covers, and/or bedspreads. When used in such articles, the **fabric** provides a barrier to prevent dust mites from entering, a pillow or mattress. Additionally, the **fabric** , when used in such articles, can prevent dust mites and allergens already existing in mattresses...

...patent application, the following definitions apply:

A "pillow ticking" means a pillow's non-removable **fabric** covering that encases the **fiberfill** or other padding.

A "pillow cover" means a pillow's removable **fabric** cover that also can function as a decorative, washable encasement (e.g., a pillow case...

...an allergen barrier. Pillow-cover closures are usually either zippers or overlapping flaps.

A "mattress **pad** " is a quilted removable covering for a mattress. For allergy sufferers, the innermost or the outermost **fabric**0 in the **pad** can function as an allergen barrier.

A "mattress ticking" means a mattress's non-removable **fabric** covering that encases the **fiberfill** or other padding and springs.

A "mattress cover" is a mattress's removable **fabric** cover that also can function as a decorative, washable encasement Institutional mattress covers also must...

...background information, the invention will now be described in more detail. This invention embodies a **textile** system that can

advantageously be used as an integral component in pillow covers, pillow cases, pillow tickings, mattress cases, mattress **pads** , mattress tickings, mattress covers, duvet covers, and bedspreads for the purpose of creating a barrier...

...allergen particles. The invention is not limited, however, to these enumerated products. For example, the **fabric** according to the invention could be used in many other products, such as sheets, sleeping bags, down-filled bedding, upholstered furniture, stuffed toys, and similar **fiber** -filled or padded items.

The **textile** system according to the invention is comprised of natural and/or synthetic spun and/or filament yarns of polyester and/or nylon and/or cotton, closely **woven** , and subsequently scoured, heat-treated, or otherwise finished to further constrict the **fabric** 's **pore** size. The **textile** **fabric** 's construction and chemical treatments are controlled to impart a unique combination of:

(1) air **permeability** (to provide compressibility necessary when used in covers for **fiber** -filled bedding products);

(2) moisture vapor **permeability** (to enhance sleeping comfort);

(3) **fabric** flexibility (also to enhance comfort);

(4) laundering durability (to provide relatively long term allergen-barrier protection after several wash cycles as typically required for allergy-relief **textile** articles); and

(5) filtration efficiency (the paramount feature necessary to function as a barrier to allergens). The **fabric** according to this invention provides an excellent combination of these five **textile** properties to produce a barrier **fabric** that is superior to other commercially-available materials.

Preferred embodiments of this invention include a **fabric** substrate made from 55-65% spun polyester and 35-45% filament polyester, 55-65% spun cotton and 35-45% filament polyester, and 100% spun cotton all by weight, densely **woven** in a plain **weave** , with **warp** and filling yams totaling 215 yams per square inch. The preferred **fabric** finishing process includes scouring, heat setting, width/length **fabric** shrinkage, and mechanical manipulation to further compact the yam-to-yam spacing. The resulting **fabric** product has a mean **pore** size of 4 to 10 microns, an air permeability of 0.5 - 25 cfm (advantageously, 0. 5 to 15 cfm), a mean **fabric** flexibility of 0.5 to 6.5 grams (bending resistance), and a moisture vapor permeability...

...manipulation can involve calendaring, wherein yams are flattened via heat and pressure to further close **fabric** **pores** ; dimensional shrinkage, wherein **fabrics** are bulked and agitated in conventional pressure jet equipment in such a way as to cause width and/or length shrinkage of the **fabric** to its minimum yam spacing, or high-speed impingement and agitation via water or dye liquor, wherein **fibers** are flattened and dispersed in a highly uniform manner, No further coatings or film laminations are required.

As mentioned above, during production of the **fabric** according to the invention, high pressure water or dye liquor can be sprayed onto the surface of the **fabric** . This process tends to matt out the **fabric** **fibers** , thereby reducing the spaces between **fibers** and the **fabric** **pore** size and also improving the **fabric** softness and hand. This high pressure liquid impingement process also can be used to texturize or pattern the **fabric** , if desired. Suitable devices and systems for performing this high pressure liquid impingement are described...

...which is entirely incorporated herein by reference.

Chemical enhancements to the preferred embodiment of the **fabric**

according to the invention include the application of a permanent antimicrobial finish and a flexible...

...3-(trimethoxysilyl)-propyldimethyloctadecyl ammonium chloride (Dow Coming 5700) can be applied. This finish protects the **fabric** against bacteria and fungi, and inhibits the growth of odor-causing bacteria. It has been **wound** isolates (Citrobacter diversus, Staphylococcus aureus, Proteus mirabilis), and urine isolates (Pseudomonas aeruginosa, E. coli). The...

...see, for example, those described in U.S. Patent No. 4,822,667, supra.). Unlike **fabrics** used in medical barrier applications, however, the allergy barrier **fabric** according to the present invention is generally not concemed with fluid repellency properties, as exemplified by a substantially negligible Suter rating. A Suter rating is an indication of a **fabric** 's resistance to water penetration, as measured by a hydrostatic pressure test, specifically, the hydrostatic head required for three drops of water to penetrate a **fabric** . The lower the Suter rating, the lower the **fabric** 's resistance to water penetration, i.e., the lower the hydrostatic head required for three drops of water to penetrate a **fabric** . In the case of the claimed **fabric** , the Suter rating is below 20.

The use of polyester and/or nylon and/or cotton of continuous filament and/or spun yarns in the **fabric** according to the invention creates a high-strength, flexible substrate that is extremely durable to home and commercial laundering. Subsequent fluorochemical and antimicrobial finishes, as described above, further protect the **fabric** against degradation due to fluid stains, **molds** , and mildew. Because the **fabrics** are tightly **woven** where yam-to-yam **abrasion** is restricted, there is little chance for **fiber** breakage and linting. Therefore, **fabric** **pore** sizes remain sufficiently and consistently small throughout extended laundering. This is important because if excessive **fiber** is lost during actual use or through extended launderings, progressively larger **pore** sizes are created and the allergen-barrier properties of the **fabric** product would be significantly deteriorated.

Fiber -filled products using the **fabrics** according to the invention as a covering **material** can be compressed and then recover without the loss of allergen-barrier properties. Air vents are not required as an integral component of the **fabricated** product, thus reducing labor and **material** costs associated with its manufacture. The lack of air vents also eliminates potential entry/exit ports for dust mites and associated allergens.

The flexibility of the **fabrics** according to the invention has a very positive effect upon the drape, noise, handle, and comfort of the ultimate end-item. The inventive **fabrics** have a mean **fabric** flexibility of 0.5 to 6.5 grains (bending resistance). The mean flexibility is the mean of the bending resistance of the **fabric** in the machine direction (MD) and the cross machine direction (XD), measured by INDA Test No. IST-90.3 on a Handle-O-Meter Model 211-5. Because the **fabrics** according to the invention do not involve coatings or laminations, their flexibility and ease of movement is excellent.

The **fabrics** according to the invention also have a moisture vapor **permeability** or transmission rate in excess of 800 g/m2)/24 hours. In certain embodiments of...

...comfort levels for the user are enhanced because the passage of evaporating perspiration through the **material** is not impaired. This feature is a decided advantage over vinyl-coated products.

Furthermore, given that the **fabrics** according to the invention are not coated or laminated, coating loss or delamination during use...

...advantage of the invention over coated or laminated products. The useful life of bedding articles **fabricated** from the **fabrics** according to the invention is thereby maximized.

Finally, by maintaining a mean **pore** size of 4 to 10 microns, the **fabrics** according to the invention are very effective barriers to dust mites and their allergy-causing excrement. In another embodiment of this invention, the **fabric** has a maximum **pore** size of 10 microns. This small maximum pore size provides long term protection against dust, dust mite, and allergen transmission.

Specific examples of **fabric** products according to the invention follows. As with the more general description above, these examples...
...air porosity, moisture vapor transport, and allergen-barrier performance as compared with existing bedding cover **fabrics** .

EXAMPLE 1

A suitable **fabric** according to the invention was manufactured from 70-denier, 34-filament texturized polyester yams, **woven** in a plain-**weave** construction. After **weaving** , the **fabric** construction had 129 **warp** ends per inch and 86 filling yams per inch, with a **fabric** weight of 2.28 ounces per yard. Subsequent processes included scouring, calendaring, and treating with durable antimicrobial and fluorochemical finishes. After processing, the **fabric** construction was 144 **warp** ends per inch and 89 filling yams per inch, with a **fabric** weight of 2.56 ounces per yard.

Comfort and barrier properties for this **fabric** are given in the Table below:

EXAMPLE 2

A suitable **fabric** according to the invention was manufactured from 40/1 Ring Spun Combed Cotton, **woven** in a plain **weave** construction. After **weaving** , the **fabric** construction had 112 **warp** ends per inch and 124 filling yams per inch, with a **fabric** weight of 4.40 ounces per square yard.

Subsequent processes include scouring, relax drying, and calendaring. After processing, the **fabric** construction was 120 **warp** ends per inch and 120 filling yams per inch, with a **fabric** weight of 4.25 ounces per square yard.

Comfort and barrier properties for this **fabric** are given in the Table below.

EXAMPLE 3

A suitable **fabric** according to the invention was manufactured from 70 denier, 34 filament texturized polyester yarn in the **warp** direction, and 26/1 Air Jet Spun Polyester in the filling direction, **woven** in a plain **weave** construction. After **weaving** , the **fabric** construction had 144 **warp** ends per inch and 78 filling yams per inch, with a **fabric** weight of 3.73 ounces per square yard. Subsequent processes include scouring, and tenter frame finishing. After processing, the **fabric** construction was 164 **warp** ends per inch and 88 filling yams per inch, with a **fabric** weight of 4.45 ounces per square yard.

Comfort and barrier properties for this **fabric** are given in the Table below.

EXAMPLE 4

A suitable **fabric** according to the invention was manufactured from 70 denier, 34 filament texturized polyester yam in the **warp** direction, and 28/1 open end combed cotton spun yam in the filling direction, **woven** in

a plain **weave** construction, After **weaving** , the **fabric** construction had 144 **warp** ends per inch and 78 filling yarns per inch, with a **fabric** weight of 3.58 ounces per square yard, Subsequent processes include scouring, and tenter frame finishing. After processing, the **fabric** construction was 164 **warp** ends per inch and 88 filing yams per inch, with a **fabric** weight of 3.80 ounces per square yard.

Comfort and barrier properties for this **fabric** are given in the Table below.

In this application, Applicant has described certain theories and...

...CLAIMS A2

1. An allergen-barrier **fabric** comprising:
a **fabric** substrate, **woven** from 0 to 45% continuous synthetic filament yams and 55 to 100% natural or synthetic yams, finished to produce a **fabric** with a mean **pore** size of 4 to 10-microns, an air **permeability** of 0.5 - 25 cfm, a mean **fabric** flexibility of 0.5 to 6.5 grams, and a moisture vapor **permeability** in excess of 800 g/m2)/24 hours, wherein the **fabric** provides a barrier to mite-induced allergen particles.
2. The allergen-barrier **fabric** according to claim 1, wherein the **fabric** has a maximum **pore** size of 10 microns.
3. The allergen-barrier **fabric** according to claim 1, further comprising an antimicrobial finish on the **fabric** , wherein the finish provides protection against **mold** and mildew.
4. The allergen-barrier **fabric** according to claim 1, further comprising a fluorochemical finish on the **fabric** , wherein the finish provides protection against fluid stains.
5. The allergen-barrier **fabric** according to claim 1, wherein the **fabric** is in the form of a pillow ticking or mattress ticking.
6. The allergen-barrier **fabric** according to claim 1, wherein the **fabric** is in the form of a pillow cover, mattress cover, mattress **pad** , bedspread or duvet cover.
7. A method for providing an allergen-barrier for a pillow, comprising:
covering the pillow with a non-coated, non-laminated **fabric** , wherein the **fabric** is **woven** from 0 to 45% continuous synthetic filament yams and 55 to 100% natural or synthetic spun yams and finished to a **fabric** with a mean **pore** size of 4 to 10 microns, an air **permeability** of 0.5 - 25 cfm, a mean **fabric** flexibility of 0.5 to 6.5 grams, and a moisture vapor **permeability** in excess of 800 g/m2)/24 hours, wherein the **fabric** provides a barrier to mite-induced allergen particles.
8. The method according to claim 7, wherein the **fabric** has a maximum **pore** size of 10 microns.
9. The method according to claim 7, wherein the **fabric** further includes an antimicrobial finish to provide protection against **mold** and mildew.
10. The method according to claim 7, wherein the **fabric** further includes a fluorochemical finish to provide protection against fluid stains.
11. A method according to claim 7, wherein the **fabric** is used as a pillow ticking.
12. A method according to claim 7, wherein the **fabric** is used in a pillow cover.
13. A method for providing an allergen-barrier for a mattress, comprising:
covering the mattress with a non-coated, non-laminated **fabric** , wherein the **fabric** is **woven** from 65-100% continuous synthetic filament yams and finished to a **fabric** with a mean **pore** size of 4 to 10 microns, an air **permeability** of 0.5 - 25 cfm, a mean **fabric**

flexibility of 0.5 to 6.5 grams, and a moisture vapor **permeability** in excess of 800 g/m2)/24 hours, wherein the **fabric** provides a barrier to mite-induced allergen particles.

14. The method according to claim 13, wherein the **fabric** has a maximum **pore** size of 10 microns.
15. The method according to claim 13, wherein the **fabric** further includes an antimicrobial finish to provide protection against **mold** and mildew.
16. The method according to claim 13, wherein the **fabric** further includes a fluorochemical finish to provide protection against fluid stains,
17. The method according to claim 13, wherein the **fabric** is used as a mattress ticking, mattress cover, mattress **pad** , bedspread or duvet cover.
18. The allergen-barrier **fabric** according to claim 1, wherein the **fabric** substrate is **woven** from 55-65% spun polyester and 35-45% filament polyester by weight.
19. The allergen-barrier **fabric** according to claim 1, wherein the **fabric** substrate is **woven** from 55-65% spun cotton and 35-45% filament polyester by weight.
20. The allergen-barrier **fabric** according to claim 1, wherein the **fabric** substrate is **woven** from 100% spun cotton.
21. The method according to claim 7, wherein the **fabric** is **woven** from 55-65% spun polyester and 35-45% filament polyester by weight.
22. The method according to claim 7, wherein the **fabric** substrate is **woven** from 55-65% spun polyester and 35-45% filament polyester by weight,
23. The method according to claim 7, wherein the **fabric** substrate is **woven** from 100% spun cotton.

34/3,K/28 (Item 28 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00918828
APPARATUS AND METHOD FOR PRODUCING NONWOVEN FABRICS HAVING IMPROVED UNIFORMITY
VERFAHREN UND VORRICHTUNG ZUR HERSTELLUNG VON VLIESSTOFFEN MIT VERBESSERTER UNIFORMITAT
APPAREIL ET PROCEDE POUR REALISER DES NON-TISSES A UNIFORMITE AMELIOREE
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PATENT (CC, No, Kind, Date): EP 909351 A1 990421 (Basic)
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APPLICATION (CC, No, Date): EP 97930156 970619; WO 97US10718 970619
PRIORITY (CC, No, Date): US 671434 960627
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INTERNATIONAL PATENT CLASS: **D04H-003/16** ; **D04H-001/56** ; D01D-004/02; D01D-005/098
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CLAIMS B	(English)	200350	178
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SPEC B	(English)	200350	6313
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APPARATUS AND METHOD FOR PRODUCING NONWOVEN FABRICS HAVING IMPROVED UNIFORMITY
INTERNATIONAL PATENT CLASS: **D04H-003/16** ...
... **D04H-001/56**

...SPECIFICATION B1
This invention relates to the field of nonwoven **fabrics** . The manufacture of nonwoven **fabrics** like meltblown and spunbond **fabrics** involves the attenuation of polymer streams, generally in a fluid such as air. In spun bond **fiber** production, for example, **fibers** are attenuated within a chamber called a drawing unit and deposited onto a moving conveyor belt called a forming wire. In mettblown **fiber** production **fibers** the drawing unit usually consists of only a nozzle through which polymer flows and is...

...melt and extruded through a slotted die with varying slots. The melt is

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I GAVE YOU THIS REFERENCE FOR REASONS OF "CONVERSION TO METRIC" ONLY — SEE INFRA

drawn into **fibers** by impinging a gas at the melt temperature to the extruding polymer, cooling the gas and **fibers** by allowing the gas to expand thereby causing the **fibers** to break up. Finally the **fibers** are collected into a web.

US-A-3 849 241 relates to a melt blown non- **woven** mat prepared from thermoplastic polymer **fibers** . The **fiber** forming resin is extruded in molten form through orifices of a heated nozzle into a stream of a hot inert gas to attenuate the molten resin as **fibers** which are then collected on a receiver to form the non- **woven** mat.

US-A-5 145 689 relates to improved meltblowing die assemblies.

US-A-4...

...provided in the air flowing passages.

One of the characteristics of certain types of nonwoven **fabrics** is the uniformity of formation. Non-uniformity can result in varying properties in a given length of nonwoven **fabric** and cause premature failure of the **fabric** and/or unsatisfactory appearance of tactile properties. Increasing uniformity should increase the force a nonwoven **fabric** may withstand prior to failure, i.e. the **fabric** should be stronger. **Fabrics** which are, pound for pound, stronger than other **fabrics** , will allow the products into which they are made to be thinner and lighter weight...

...belief, some of them believe that one of the impediments to producing a stronger nonwoven **fabric** is the large scale turbulence produced in the drawing chamber by the large amount of air moving through it along with the **fibers** . They believe that large scale turbulence disrupts the smooth flow of **fibers** from the spinneret to the forming wire and so introduces non-uniformities and other areas...

...but increasing the turbulence in the drawing chamber will result in more shifting of the **fibers** and so therefore more uniform web production. The exact theory of operation remains undefined, however...

...of this invention.

Accordingly, it is an object of this invention to provide a nonwoven **fabric** which is produced in a novel way which increases web uniformity. The increase in uniformity...

...as defined in claim 3.

The objects of the invention are provided by a nonwoven **fabric** or web which has been produced in a pneumatic chamber which has tiny grooves over an effective amount of its fluid contacting surface. Such a **fabric** or web has a uniformity superior to a similar web produced in an ungrooved pneumatic...

...16 was produced using a grooved pneumatic chamber.

DEFINITIONS

As used herein the term "nonwoven **fabric** or web" means a web having a structure of individual **fibers** or threads which are interlaid, but not in an identifiable manner as in a **knitted fabric** . Nonwoven **fabrics** or webs have been formed from many processes such as for example, meltblowing processes, spunbonding processes, and bonded carded web processes. The basis weight of nonwoven **fabrics** is usually expressed in ounces of **material** per square yard (osy) or grams per square meter (gsm) and the **fiber** diameters useful are usually expressed in microns. (Note that to convert from osy to gsm, multiply osy by 33.91). As used herein the term "microfibers" means small diameter **fibers** having an average diameter not greater than about 75 microns, for example, having

an average...

...diameter of from about 2 microns to about 40 microns. Another frequently used expression of **fiber** diameter is denier, which is defined as grams per 9000 meters of a **fiber** and may be calculated as **fiber** diameter in microns squared, multiplied by the density in grams/cc, multiplied by 0.00707. A lower denier indicates a finer **fiber** and a higher denier indicates a thicker or heavier **fiber** . For example, the diameter of a polypropylene **fiber** given as 15 microns may be converted to denier by squaring, multiplying the result by .89 g/cc and multiplying by .00707. Thus, a 15 micron polypropylene **fiber** has a denier of about 1.42 (152) x 0.89 x .00707 = 1.415...

...measurement is more commonly the "tex", which is defined as the grams per kilometer of **fiber** . Tex may be calculated as denier/9.

As used herein the term "meltblown **fibers** " means **fibers** formed by extruding a molten thermoplastic **material** through a plurality of fine, usually circular, die capillaries as molten threads or filaments into...

...velocity, usually hot, gas (e.g. air) streams which attenuate the filaments of molten thermoplastic **material** to reduce their diameter, which may be to microfiber diameter. Thereafter, the meltblown **fibers** are carried by the high velocity gas stream and are deposited on a collecting surface to form a web of randomly disbursed meltblown **fibers** . Such a process is disclosed, for example, in US Patent 3,849,241 to Butin et al. Meltblown **fibers** are microfibers which may be continuous or discontinuous, are generally smaller than 10 microns in...

...are generally tacky when deposited onto a collecting surface.

As used herein the term "spunbonded **fibers** " refers to small diameter **fibers** which are formed by extruding molten thermoplastic **material** as filaments from a plurality of fine, usually circular capillaries of a spinneret with the...

...and deposited on a moving foraminous mat, belt or "forming wire" to form the nonwoven **fabric** . Examples of this process may be found, for example, in US Patent 4,340,563...

...542,615 to Dobo et al. and US Patent 5,028,375 to Reifenhauser. Spunbond **fibers** are quenched and, therefore, generally not tacky when they are deposited onto a collecting surface. Spunbond **fibers** are generally continuous and have average diameters (from a sample of at least 10) larger...

...laminate may be made by sequentially depositing onto a moving forming belt first a spunbond **fabric** layer, then a meltblown **fabric** layer and last another spunbond layer and then bonding the laminate in a manner described below. Alternatively, the **fabric** layers may be made individually, collected in rolls, and combined in a separate bonding step. Such laminated **fabrics** usually have a basis weight of from about 0.1 to 12 osy (6 to...

...while it is forming. Such other materials may be pulp, superabsorbent particles, cellulose or staple **fibers** , for example. Coform processes are shown in commonly assigned US Patents 4,818,464 to...

...symmetries.

As used herein, the term "machine direction" or MD means the length of a **fabric** in the direction in which it is produced. The term "cross machine direction" or CD means the width of **fabric** , i.e. a direction generally perpendicular to the MD.

As used herein, the term "garment...

...like bouffant caps, surgical caps and hoods, footwear like shoe coverings, boot covers and slippers, **wound dressings , bandages ,** sterilization **wraps** , wipers, garments like lab coats, coveralls, aprons and jackets, patient bedding, stretcher and bassinet sheets, and the like.

As used herein, the term "personal care product" means **diapers ,** training pants, absorbent underpants, adult incontinence products, and feminine hygiene products.

As used herein, the...

...garden equipment (mowers, roto-tillers, etc.) and lawn furniture, as well as floor coverings, table **cloths** and picnic area covers.

TEST METHODS

Frazier Permeability : A measure of the **permeability** of a **fabric** or web to air is the **Frazier Permeability** which is performed according to Federal Test Standard 191A, Method 5450 dated July 20, 1978, and is reported as an average of 3 sample readings. **Frazier** Permeability measures the air flow rate through a web in **cubic feet** of air per **square foot** of web per **minute** or CFM. Convert CFM to liters per **square meter** per **minute** (LMM) by multiplying CFM by 304.8.

Grab Tensile test: The grab tensile test is a measure of breaking strength and elongation or strain of a **fabric** when subjected to unidirectional stress. This test is known in the art and conforms to...

...pounds to break and percent stretch before breakage. Higher numbers indicate a stronger, more stretchable **fabric** . The term "load" means the maximum load or force, expressed in units of weight, required...

...Values for grab tensile strength and grab elongation are obtained using a specified width of **fabric** , usually 4 inches (102 mm), clamp width and a constant rate of extension. The sample is wider than the clamp to give results representative of effective strength of **fibers** in the clamped width combined with additional strength contributed by adjacent **fibers** in the **fabric** . The specimen is clamped in, for example, an Instron Model TM, available from the Instron...

...Phila., PA 19154, which have 3 inch (76 mm) long parallel clamps. This closely simulates **fabric** stress conditions in actual use.

DETAILED DESCRIPTION

The processes for which this invention may be useful are the meltblowing or spun bonding processes which are nonwoven **fabric** production methods which are well known in the art. These processes generally use an extruder to supply melted thermoplastic polymer to a spinneret where the polymer is **fiberized** to yield **fibers** which may be staple length or longer. The **fibers** are then drawn, usually pneumatically, and deposited on a moving foraminous mat or belt to form the nonwoven **fabric** . The **fibers** produced in the spunbond and meltblown processes are microfibers as defined above.

Nonwoven **fabrics** are used in the production of garments, infection control products, personal care products and protective covers.

Spunbond nonwoven **fabric** is produced by a method known in the art and described in a number of...

...a heated extruder. The extruder supplies melted polymer to a spinneret where the polymer is **fiberized** as it passes through fine openings usually arranged in one or more rows in the...

...and deposited on a moving foraminous mat, belt or "forming wire" to form the nonwoven **fabric** .

The **fibers** produced in the spunbond process are usually in the range of from about 10 to...

...40 microns in diameter, depending on process conditions and the desired end use for the **fabrics** to be produced from such **fibers** . For example, increasing the polymer molecular weight or decreasing the processing temperature result in larger diameter **fibers** . Changes in the quench fluid temperature and pneumatic draw pressure can also affect **fiber** diameter.

Polymers useful in the spunbond process generally have a process melt temperature of between...

...between about 10 and 50. Examples of suitable polymers include polypropylenes, polyethylenes and polyamides.

Bicomponent **fibers** may also be used in the practice of this invention. Bicomponent **fibers** are commonly polypropylene and polyethylene arranged in a sheath/core, "islands in the sea" or side by side configuration. Biconstituent **fibers** may also be used in the practice of this invention. Blends of a polypropylene copolymer...

...be spun.

This invention pertains particularly to the process used to cool and attenuate the **fibers** after they are produced by the spinneret. The spunbonding patents cited above, though describing somewhat different processes, have in common that they provide a chamber for pneumatically attenuating the **fibers** prior to formation of a web. This chamber may be seen in Figure 1 and...

...in accordance with this invention. The instant invention is therefore, suitable for use in any **fiber** producing process which relies on pneumatically drawing **fibers** . Accordingly, this invention is specifically contemplated to encompass not only spunbond processes but also meltblown...

...the practice of the present invention, pellets, beads or chips (not shown) of a suitable **material** are introduced into a hopper 12 of an extruder 14. The extruder 14 has an...

...screw (not shown) which is driven by a conventional drive motor (not shown). As the **material** advances through the extruder 14, due to rotation of the extrusion screw by the drive motor, it is progressively heated to a molten state. Heating of the **material** may be accomplished in a plurality of discrete steps with its temperature being gradually elevated...

...at an elevated level for extrusion. The temperature which will be required to heat the **material** to a molten state will vary somewhat depending upon exactly which **material** is utilized and can be readily determined by those in the art.

Figure 3 illustrates...

...about 20 inches to about 60 inches) or more. Figure 2 illustrates that the molten **material** emerges from the orifices 20 of the die 16 as molten strands or threads 24...

...attenuating gas velocities and wider air passageway gaps are generally preferred if substantially continuous meltblown **fibers** or microfibers 24 are to be produced.

The two streams of attenuating gas converge to...

...which entrains and attenuates the molten threads 24, as they exit the orifices 20, into **fibers** or, depending on the degree of attenuation, microfibers of a small diameter which is usually less than the diameter of the orifices 20. The gas-borne **fibers** or microfibers 24 are blown, by the action of the attenuating gas, onto a collecting...

...located below the surface of the foraminous belt 52 and between the rollers 54. The **fibers** or microfibers 24 are collected as a coherent matrix of **fibers** on the surface of the endless belt 52 which is rotating as indicated by the...

...to about 14 inches) from the surface of the foraminous belt 52 upon which the **fibers** are collected. The thus collected, entangled **fibers** or microfibers 24 are coherent and may be removed from the belt 52 as a ...

...fluid flow. Its believed that this configuration could result in twisting or coiling of the **fibers** . Twisting or coiling the **fibers** should result in a more bulky web and such webs are useful in filtration, for...

...angled near the end of the drawing unit to impart a slight twist to the **fibers** . It should also be noted that the grooves on the walls of a spunbond drawing...

...in other product areas such as in tissue production using a grooved headbox, in staple **fiber** technology using a grooved **fiber** chute, in paper production and in coform production using a grooved picker nozzle. Again, the...

...more noticeable at lower basis weights than higher basis weights since the increased amount of **material** in a higher basis weight **fabric** begins to overshadow the effect of improved formation of the web due to the instant...

...set of operating conditions as can be noted in, for example, Figure 9 where the **fabric** produced in a grooved pneumatic chamber has improved **permeability** at the lower drawing unit pressure but not at the higher drawing unit pressure.
It...

...CLAIMS 1. A method of producing a nonwoven web (56) comprising the step of drawing thermoplastic **fibers** with fluid through a pneumatic chamber (38, 40, 42, 44), comprising a drawing unit having walls between which **fibers** are conveyed in a fluid flow, wherein said walls have grooves between about 10 and...

...Use of the web (56) directly obtained by the method of claim 1 in a **diaper** , a feminine hygiene product, a surgical drape, a surgical gown, a protective cover, a garment or a coform wipe.
3. A pneumatic chamber (38, 40, 42, 44) for spunbond **fibers** comprising a drawing unit having walls between which **fibers** are conveyed in a fluid flow, characterized in that said walls have grooves between 10 ...

34/3,K/45 (Item 45 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00553558
Medical barrier fabrics **and methods of making same**
Medizinische Barrierestoffe und Methode zur Herstellung
Textiles barrieres medicaux et methode de fabrication
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PATENT (CC, No, Kind, Date): EP 507760 A1 921007 (Basic)
EP 507760 B1 960619
APPLICATION (CC, No, Date): EP 92870055 920402;
PRIORITY (CC, No, Date): US 679735 910403
DESIGNATED STATES: BE; DE; ES; FR; GB; IT; LU; NL
INTERNATIONAL PATENT CLASS: A61B-019/08; **A61L-031/00**
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CLAIMS A (English) EPABF1 1100
CLAIMS B (English) EPAB96 1256
CLAIMS B (German) EPAB96 1197
CLAIMS B (French) EPAB96 1390
SPEC A (English) EPABF1 3794
SPEC B (English) EPAB96 3980
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Medical barrier fabrics **and methods of making same**
...INTERNATIONAL PATENT CLASS: **A61L-031/00**

...ABSTRACT A1
A liquid impermeable barrier **fabric** (10) which resists penetration of liquids under finite hydraulic heads and maintains that capability after upwards of 75 institutional washing/sterilization cycles. The barrier **fabric** is structurally characterized by a silicone membrane (12) attached to a **fabric** substrate (14). The substrate is a tightly **woven** **fabric** which is constructed of polyester yarns (16,18). Attachement of the membrane to the **fabric** substrate is by a bonding mechanism in which the silicone **material** is in intimate contact with a substantial portion

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of the looped portions of the yarn, which define the surface of the **fabric** . This bonding mechanism also includes hydrophilicity of the yarn surface with which the silicone is in intimate contact. The **fabric** is treated with a hydrophilic finish to provide this aspect of the bonding mechanism. This barrier **fabric** is provided through the use of coating/calendaring apparatus. A film of highly viscous, uncured...

...with a Mooney viscosity of 45 and than pressed between roller (28,30), into a **fabric** web, to attain the referenced intimate contact. The silicone is then cured. The **fabric** is paticularly intended for incorporation in reusable medical/surgical products. (see image in original document)

...SPECIFICATION A1

The present invention relates to improvements in barrier **fabrics** and more particularly to an improved barrier **fabric** adapted for incorporation in reusable medical/surgical products, and also to improvements in the methods of making same.

Barrier **fabrics** are generically characterized by being impervious to penetration by liquids. There is a class of barrier **fabrics** which, additionally, are vapor **permeable** to provide what is termed breathability. Breathable barrier **fabrics** , for example, find widespread use in **fabricating** foul weather garments to provide protection against rain, while permitting the dissipation of perspiration. Breathable barrier **fabrics** are also used in constructing surgical drapes to protect a surgeon from blood and other...

...by the hydraulic head of liquid which can be resisted before the liquid penetrates the **fabric** . Generally speaking, liquid impermeability is inversely proportional to breathability, or the degree to which a **fabric** is **permeable** to vapor.

The present invention is directed to barrier **fabrics** which provide liquid impermeability, without regard to any breathability function.

More specifically, the present invention is directed to barrier **fabrics** adapted for incorporated in reusable, medical/surgical products.

In one specific aspect, the invention is directed to **fabrics** which are specifically adapted to be used in constructing surgical gowns, to provide the highest degree of possible protection from such potentially fatal microorganisms as the AIDS virus. Breathable barrier **fabrics** have been previously used for this purpose, in surgical gowns, to avoid discomfort for the surgeon during an extended surgical procedure. While these barrier **fabrics** do provide a high degree of reliability in preventing strike through of blood and the...

...products have further requirements, which distinguish them from other products, or garments that incorporate barrier **fabrics** . This is to say that, after each use, a reusable surgical gown, must be washed...

...orders of magnitude greater that those existing in the laundering, or dry cleaning of barrier **fabrics** incorporated in ordinary garments. In fact, many of the barrier **fabrics** , intended for use in normal garments, such as foul weather gear, become unusable after a...

...have a drapability and feel, which is preferred over that of disposable gowns, which are **fabricated** of nonwoven **fabrics** . Drapability and feel are factors of the "hand" of the **textile** **fabrics** employed in constructing reusable surgical gowns.

All of this is to emphasize that there is...

...use cost of reusable surgical gowns and other reusable,

medical/surgical garments and products.

Barrier **fabrics** represent a highly developed and crowded art, as is apparent from the extremely large number...

...of which have had some measure of commercial acceptance.

However, none of these prior barrier **fabrics** fully meet the ends sought herein, namely the provision of highly effective liquid barrier which...

...cycles and, further, has a "hand" which approximates, or at least approaches the "hand" of **textile fabrics** .

Accordingly, the object of the present invention is to provide a barrier **fabric** which overcomes the short-comings of prior art **fabrics** employed in the construction of reusable medical/surgical products, to the end that the per...

...of the invention, in accordance with its broad aspects may be attained by a barrier **fabric** for use in reusable medical/surgical products, which are to be washed, dried and sterilized subsequent to each use. This barrier **fabric** is functionally characterized in that it is impermeable to liquids under a pressure no less...

...inch. It is further characterized in that this impermeability standard is maintained after the barrier **fabric** has been subject to at least 75 institutional washing/sterilization cycles.

This barrier **fabric** comprises a liquid impervious membrane and a **fabric** substrate to which the membrane is attached and is characterized in that the membrane is formed by a typical, methyl vinyl silicone polymer. The **fabric** substrate is characterized in being formed of tightly **woven** polyester yarns, which form a plurality of curved yarn portions in the form of "nubs" which define one surface of the **fabric** . The silicone membrane is attached to this surface of the **fabric** substrate by a bonding mechanism comprised of portions of the membrane conforming to and in...

...approximately 30 and 70 and preferably 50 as measured on the Shore "A" scale.

The **fabric** substrate is, preferably, a plain woven fabric having a porosity of less than ten cubic feet per minute per square yard, as measured by the **Frazier** Test.

The **fabric** substrate may also be characterized as, preferably being a plain **woven fabric** , which has a griege weight of approximately 2.3 ounces per square yard, with the **warp** yarns and filling yarns have a denier of approximately 70, and constructed with approximately 138 ends per inch and approximately 86 picks per inch. Additional advantages are found where the **warp** yarns are 70/34 false twist, set yarn and the filling yarns are 70/68...

...apparatus wherein a film of highly viscous, uncured silicone is coated onto a web of **fabric** . Features of the invention, particularly unique to its method aspects include providing a film of...

...talc may be applied to the silicone film, after it has been attached to the **fabric** web and prior to curing of the silicone.

The above and other object and features of the invention will be apparent from the following description of the **fabric** of the present invention, wherein specific exemplification of the improved **fabric** is set forth, with reference to the accompany drawings and the novelty thereof pointed out...

...drawing:

Fig. 1 is a cross section, on a highly enlarged scale, of the

barrier **fabric** of the present invention; and

Fig. 2 is a diagrammatic illustration of the process for producing the **fabric** of Fig. 1.

The **fabric** of the present is generally indicated by reference character 10 in Fig. 1 and comprises a silicone membrane 12 and a **fabric** substrate 14.

The substrate 14 is a highly bulked, tightly **woven** **fabric** , preferably plain **woven** (one by one) comprised of **warp** yarns 16 and filling yarns 18.

Both the **warp** yarns and filling yarns are continuous, multifilament, polyester yarns, which are readily available from various commercial sources.

The substrate **fabric** is further characterized in that it has 138 ends per inch and 86 picks per inch, employing 70/34, false twist, texturized, set polyester, **warp** yarns and 70/68 untexturized, i.e., fully oriented, polyester filling yarns.

The **fabric** substrate is also characterized by a griege weight of approximately 2.26 ounces per square yard. In the usual case the **fabric** will be dyed and a hydrophilic finish is applied, to the end that the hydrophobic surfaces of the polyester yarn filaments are hydrophilic. The dried and hydrophilic finished **fabric** has a weight of approximately 2.6 ounces per square yard.

The membrane 12 is...

...silicone polymer may be what is known as a typical, methyl vinyl silicone. The silicone **material** is modified, pursuant to procedures known in the art, through the addition of silica fillers...

...the elevated temperatures involved, all as has been set forth above. Thus the selected membrane **material** is not subject to degradation when incorporated in reusable, medical/surgical products.

The hardness parameter...

...factors include attaining the desired liquid impermeability while at the same time providing a barrier **fabric** which has a "hand" which approximates that of plain **textile** **fabrics** .

As will later, more fully appear in the description of the method employed in forming this **fabric** , the membrane 12 is attached to the **fabric** substrate 14 by an enhanced, and highly effective bond, which is attained by the application of a hydrophilic finish to the **fabric** substrate 14, prior to application of the membrane 12 thereto.

Polyester, as an inherent characteristic, is hydrophobic. In many **fabric** products, it is desired that the **fabric** possess hydrophilicity. This need has been met by the development of hydrophilic finishes, or treatments...

...to the polyester surfaces of the filaments comprised in the yarns employed in constructing the **fabric** . The treated **fabric** then possesses water absorbent properties not found in untreated polyester **fabrics** .

Returning to the **fabric** substrate 12, it will be seen that the **woven** **warp** and filling yarns comprise curved portions. These curved portions form a plurality of closely spaced, projecting "nubs" which define the surfaces of the **fabric** . The bonding mechanism, whereby the membrane is attached to the **fabric** is in part derived from an intimate contact between these curved portions, or "nubs". This...

...which provides the surfaces of their filaments with hydrophilicity.

As has been previously indicated, the **fabric** substrate is tightly **woven** , and has been characterized above in terms of ends and picks and

yarn deniers. These parameters define a **fabric** which has minimum sized interstices between the yarns and their filaments. Minimum interstice size may also be defined by the **porosity** of a **fabric** . It has been found that the **fabric** substrate 12 should have a **porosity** which limits air flow to less than 10 **cubic feet** per **minute** per **square** yard, as measured by the **Frazier** Test (ASTM-737-75).

By obtaining intimate contact between the "nubs" which define the surface of a **fabric** having a minimum interstice size, characterized above, it has been found that a higher degree...

As has been previously indicated, the **fabric** substrate is tightly **woven** , and has been characterized above in terms of ends and picks and yarn deniers. These parameters define a **fabric** which has minimum sized interstices between the yarns and their filaments. Minimum interstice size may also be defined by the **porosity** of a fabric. It has been found that the fabric substrate 14 should have a porosity which limits air flow to less than 0,339 m(**sup** 3) per **min** . per m(**sup** 2) (10 **cubic** **feet** per **minute** per **square** yard), as measured by the **Frazier** Test (ASTM-737-75).

By obtaining intimate contact between the "nubs" which define the surface of a **fabric** having a minimum interstice size, characterized above, it has been found that a higher degree...

...impermeability function, with a minimum thickness membrane.

The "nubbed" character of the surface of a **woven** **fabric** also explains the earlier reference to the thickness of the surface be expressed as an...

...of a "nub".

It should be further appreciated that the small interstice sizes of the **fabric** permits a reasonable tolerance in preventing a breakdown in impermeability, i.e., strikethrough, where the...

...less than the desired 0,0076 cm (.003 inch).

The process for manufacturing the barrier **fabric** 10 is diagrammatically illustrated in Fig. 2.

A web of **fabric** substrate 14 is drawn from a supply roll 20 and fed to calendaring/coating apparatus 22, which coats the membrane 12 to one surface of the substrate. The **fabric** substrate is a tightly **woven** **fabric** , as above defined and characterized. This **fabric** has, further been treated with a hydrophilic finish.

The calendaring/coating apparatus may be of...

...a highly viscous, or semi-liquid polymer film and then applying that film to a **fabric** substrate.

Thus, there is a batch source, or supply, of uncured silicone, indicated by reference...

...at room temperature. This viscosity contributes to obtaining the desired intimate contact between the silicone **material** and the **fabric** "nubs", discussed above.

The source batch (24) is spread and squeezed between calendaring rolls 26...

...approximates the average thickness of the membrane 12 in the end product.

The web of **textile** **fabric** substrate is fed, in overlying relation onto the film of uncured silicone and pressed thereagainst by a pressure roll 30.

The **fabricate** substrate is thus coated with the uncured, silicone polymer. The viscous ...silicone, permits it to be forced into the intimate contact with the yarns of the **fabric** 14. This intimate contact is illustrated in Fig. 1.

The coated **fabric** is then fed to a vertically upward run. Talc is applied, at 31, to the...

...the uncured silicone membrane. Excess talc is then removed by a brush 32. The coated **fabric** is then **wound** into roll form in order that it may be later fed through an oven to heat cure the silicone membrane.

The coated **fabric** is then fed through an oven to heat cure the

silicone membrane. Conventional temperatures and...

...This residual talc, and the roughened surface, contribute to the improved "hand" of the barrier **fabric** 10.

It will be further noted that polymer membranes of prior barrier materials have been vulnerable to degradation by **abrasion** . When used in surgical/medical products, barrier **fabrics** are subject to substantial **abrasion** . They are further subject to **abrasion** in the institutional washing process. Thus it has been a conventional practice to protect such membranes from **abrasion** by attaching protective substrates to opposite sides of the membrane.

The silicone membrane of the **fabric** of the present invention is less subject to **abrasion** than most barrier **fabrics** that have been used in reusable, surgical/medical products. In part, it is believed that this **abrasion** resistance improvement may be attributed to the talc treatment of the uncured silicon membrane. In...

...not necessary for the outer surface of the membrane 12 to be protected by a **fabric** layer attached thereto, as is the case of a laminated barrier **fabric** . It is however, preferably that the membrane be protected by a **fabric** shield. This end may be attained providing a barrier **fabric** piece of a desired outline and then securing a light weight **fabric** piece, or shield, of corresponding outline in overlying relation to the exposed membrane surface, by peripheral stitching. Alternatively, the barrier **fabric** 10 may be incorporated into a medical/product in such a fashion that it is secured to another **fabric** piece of the product so that that other **fabric** piece serves as a protective shield.

At this point, it will be acknowledged that the...

...membranes is known. The present invention differs from those known processes in that the barrier **fabric** produced, as taught herein, fulfills the needs of reusable, medical/surgical products in a fashion ...

...polymer, its viscosity in an uncured state at the time of being calendared onto the **fabric** substrate, the hydrophilic finish, modification of the **fabric** , the weight of the **fabric** substrate, the thickness of the silicone membrane, the durometer, or hardness of the cured silicone membrane, as well as the **fabric** yarns and the **porosity** of the **fabric** , which is minimized by the tightly **woven** construction employed, as related to yarn deniers and pick and end counts and/or **porosity** .

Barrier **fabric** manufactured pursuant to the foregoing teachings is not only liquid impermeable, but resists penetration by...

...be occasions, such as where a surgeon wipes a blood covered scalpel against the barrier **fabric** , where there will be finite hydraulic pressures which could cause a strikethrough.

It has been...

...that reliable protection against strikethroughs can be obtained where the liquid impermeability of the barrier **fabric** resists penetration of liquid under a pressure of at least 34,4 kPa (five pounds per square inch). Barrier **fabrics** manufactured pursuant to foregoing teachings provide this minimum impermeability standard, and, in fact, are resistant...

...34,4 kPa (five pounds per square inch).

The significant characteristic of the present barrier **fabric** is that

this minimum impermeability requirement is met by the barrier **fabric** after it has been processed for subsequent reuse by the institutional washing/sterilization cycle specified...

...small degree, insofar as the harshness of the conditions which tend to degrade the barrier **fabric** is concerned. This is to say that the term "institutional washing/sterilization cycle", as herein...

...skilled in the art and a proper standard for measuring the functional characteristics of barrier **fabrics** .

The barrier **fabric** of the present invention is unique in that following a minimum of 75 institutional washing/sterilization cycles, the barrier **fabric** still meets the minimum impermeability requirement of resisting penetration of liquids under a hydraulic head...

...kPa (five pounds per square inch). In fact, this minimum standard is maintained after the **fabric** has been processed by institutional washing/sterilization cycles in excess of 100.

The present barrier **fabric** is thus, highly durable. It is significant to note that ...more, institutional washing/sterilization cycles, that there is little, or no, visible delamination of the **fabric** substrate 14 from the membrane 12.

While there are preferred parameters, as indicated above, improved **fabric** characteristics can be obtained within relatively narrow ranges. Thus, for example, the viscosity of the...

...be appreciated that there will be some measure of deviation from preferred parameters defining the **fabric** substrate 14. Thus, there are alternate yarn **deniers** and pick and end counts, and resultant **fabric** weights, which would provide an equivalent, highly bulked, tightly **woven** , low **porosity** **fabric** .

The preferred, hydrophilic finish is generically characterized as involving a method of contacting a **textile** with a swelling agent and a base and heating to alter the **textile** , and then acidifying the treating bath and contacting the **textile** with a hydrophilic polymer, all of which is more fully taught in U.S. Patent...

...One advantage of this hydrophilic finish treatment is that the resultant hydrophilicity of the treated **fabric** is permanent. Chemicals for this treatment are available from Dow Corning, Inc. Midland, Michigan under...

...Inc., Wilmington Delaware, Alkaril QFC available from Chemical, Inc., Winds, Georgia and Scotchgaurd Stain Release **Fabric** Treatment FC-22, available from the 3M Company, St. Paul, Minnesota. ...

...CLAIMS A1

1. A barrier **fabric** (10) for use in reusable medical/surgical products, which are to be washed, dried and sterilized subsequent to each use,

said barrier **fabric** being functionally characterized in that it is impermeable to liquids under a pressure no less than five pounds per square inch, and

this impermeability standard is maintained after the barrier **fabric** has been subject to at least 75 institutional washing/sterilization cycles,

said barrier **fabric** (10) comprising

a liquid impervious membrane (12) and

a **fabric** substrate (14) to which the membrane is attached, characterized in that

the membrane (14) is formed by a typical, cured methyl vinyl silicone polymer,

the **fabric** substrate (12) is formed of tightly **woven** polyester yarns, which form a plurality of curved yarn portions in the form of "nubs" which define one surface of the **fabric** , and the silicone membrane is attached to said one surface of the **fabric** substrate by a bonding mechanism comprised of

portions of the membrane conforming to and in...

...the portions said "nubs", with which the membrane is in intimate contact.

2. A barrier **fabric** as in claim 1

further characterized by any one of the following

(A) the average...

...hardness between approximately 30 and 70 as measured on the Shore "A" scale;

(C) the **fabric** substrate is a plain woven fabric having a porosity of less than ten cubic feet per minute per square yard, as measured by the **Frazier** Test;

(D) the **fabric** substrate (14) is a plain **woven** **fabric** ,

has a griege weight of approximately 2.3 ounces per square yard,

the **warp** yarns and filling yarns have a denier of approximately 70, and

is constructed with approximately 138 ends per inch and approximately 86 picks per inch;

(E) the **fabric** substrate (14) is a plain **woven** **fabric** ,

has a griege weight of approximately 2.3 ounces per square yard,

the **warp** yarns are 70/34 false twist, set yarn and

the filling yarns are 70/68...

...with approximately 138 ends per inch and approximately 86 picks per inch;

3. A barrier **fabric** as in any of the preceding claims

further characterized in that

the **fabric** substrate (14) has been dyed and a hydrophilic finish applied thereto in order to provide the hydrophilic surface characteristic, and

the finished weight of the **fabric** substrate is approximately 2.6 ounces per square yard, and

the silicone membrane (12) has...

...the membrane is approximately 50 as measured on the Shore "A" scale.

4. A barrier **fabric** as in any of the preceding claims

further characterized in that

the outer surface of...

...thereto, prior to curing of the silicone membrane.

5, A method of making a barrier **fabric** (10) for use in reusable medical/surgical products, which are to be washed, dried and sterilized subsequent to each use,

said barrier **fabric** being functionally characterized in that it is impermeable to liquids under a pressure no less than five pounds per square inch, and

this impermeability standard is maintained after the barrier **fabric** has been subject to at least 75 institutional washing/sterilization cycles,

said method comprising the...

...of

forming a thin film of uncured silicone in a highly viscous state,

providing a **fabric** web formed of tightly **woven** polyester yarns, which form a plurality of curved yarn portions in the form of "nubs" which define one surface of the **fabric** , said web being further characterized in that it has been treated with a hydrophilic finish...

...of each of said "nubs", and

thereafter curing the silicone film to provide a barrier **fabric** characterized in having a **fabric** substrate and a silicone membrane attached thereto by a highly tenacious bonding mechanism.

6. A...

...60;

(B) Forming the silicone film with a Mooney viscosity of approximately 45;

(C) the **fabric** web has been contacted with a treating bath comprising a swelling agent and a base and the treating bath has been heated to alter the **fabric** , and then the treating bath has been acidified and the **fabric** contacted with a hydrophilic polymer;

(D) an additional step of coating the exposed, surface of the silicone film with talc after attachment of the film to the **fabric** web and before curing of the silicone;

(E) the film is formed with the addition...

...on the Shore "A" scale;

(G) the step of providing a web comprises providing a **fabric** web which is a plain woven **fabric** having a **porosity** of less than ten **cubic feet** per **minute** per **square** yard, as measured by the **Frazier** Test;

(H) the step of providing a web comprises providing a **fabric** web which is a plain woven **fabric** having

a **porosity** of less than ten **cubic feet** per **minute** per **square** yard, as measured by the **Frazier** Test, and

a griege weight of approximately 2.3 ounces per square yard,

the **warp** yarns and filling yarns have a denier of approximately 70, and

is constructed with approximately...

...approximately 86 picks per inch;

(I) the step of providing a web comprises providing a **fabric** web which is a plain woven **fabric** having

a **porosity** of less than ten **cubic feet** per **minute** per **square** yard, as measured by the **Frazier** Test, and

a griege weight of approximately 2.3 ounces per square yard,

the **warp** yarns and filling yarns have a denier of approximately 70, and

is constructed with approximately...

...ends per inch and approximately 86 picks per inch, and

the finished weight of the **fabric** substrate is approximately 2.6 ounces per square yard, and

the step of providing a...

...on the Shore "A" scale;

(K) the step of providing a web comprises providing a **fabric** web which

the **warp** yarns are 70/34 false twist, set yarn and

the filling yarns are 70/68...

...CLAIMS B1

1. A barrier **fabric** (10) for use in reusable medical/surgical products, which are to be washed, dried and sterilized subsequent to each use, said barrier **fabric** being functionally impermeable to liquids under a certain pressure and this impermeability standard is maintained after the barrier **fabric** (10) has been subject to institutional washing/sterilisation cycles, said barrier **fabric** (10) comprising a liquid impervious membrane (12) formed from a cured polymer and a **fabric** substrate (14) to which the membrane (12) is attached, the **fabric** substrate (14) being formed of tightly **woven** polyester yarns,

characterized in that the barrier **fabric** (10) is impermeable to liquids under a pressure no less than 34,4 kPa (five pounds per square inch) and this impermeability standard is maintained after the barrier **fabric** (10) has been subject to at least 75 institutional washing/sterilisation cycles,

in that the...

...30 and 70 as measured on the Shore "A" scale, and the yarns of the **fabric** substrate (14) form a plurality of curved yarn portions in the form of "nubs" which define one surface of the **fabric** ,

and in that the silicone membrane ((12) is attached to said one surface of the **fabric** substrate (14) by a bonding mechanism comprised of portions of the membrane conforming to and...

...portions of said "nubs", with which the membrane is in intimate contact.

2. A barrier **fabric** as in claim 1

further characterized by any one of the following:

(A) the average...

...the silicone membrane (12) is between approximately 0,005 cm and 0,025 cm (.002 **inches** and .010 inches);

(B) the fabric substrate is a plain woven fabric having a porosity...

...m(sup 2) (ten cubic feet per minute per square yard), as measured by the **Frazier** Test;

(C) the **fabric** substrate (14) is a plain **woven** **fabric** , has a griege weight of approximately 78 g/m(sup 2) (2.3 ounces per square yard),

the **warp** yarns and filling yarns have a number of approximately 7,8 g/km (denier of...

...ends per inch) and approximately 34 picks per cm (86 picks per inch);

(D) the **fabric** substrate (14) is a plain **woven** **fabric** ,

has a griege weight of approximately 78 g/m(sup 2) (2.3 ounces per square yard),

the **warp** yarns are 70/34 false twist, set yarn and

the filling yarns are 70/68...

...per inch) and approximately 34 picks per cm (86 picks per inch);

3. A barrier **fabric** as in any of the preceding claims

further characterized in that

the **fabric** substrate (14) has been dyed and a hydrophilic finish applied thereto in order to provide the hydrophilic surface characteristic, and

the finished weight of the **fabric** substrate is approximately 88 g/m(sup 2) (2.6 ounces per square yard), and...

...the membrane is approximately 50 as measured on the Shore "A" scale.

4. A barrier **fabric** as in any of the preceding claims

further characterized in that

the outer surface of...

...thereto, prior to curing of the silicone membrane.

5. A method of making a barrier **fabric** (10) for use in reusable medical/surgical products, which are to be washed, dried and sterilized subsequent to each use,

said barrier **fabric** being functionally impermeable to liquids under a pressure no less than 34,47 kPa (five pounds per square inch), and

this impermeability standard is maintained after the barrier **fabric** has been subject to at least 75 institutional washing/sterilization cycles,

according to which method a film of uncured polymer is applied on a **fabric** web of polyester yarns and the polymer is cured,

characterized in that said method comprises...

...hardness in the range of 30 to 70 on the Shore "A" scale;

providing a **fabric** web formed of tightly **woven** polyester yarns, which form a plurality of curved yarn portions in the form of "nubs" which define one surface of the **fabric** , said web has been treated with a hydrophilic finish to provide the surfaces of the...

...of each of said "nubs", and

thereafter curing the silicone film to provide a barrier **fabric** characterized in having a **fabric** substrate and a silicone membrane attached thereto by a highly tenacious bonding mechanism.

6. A...

...60;

(B) Forming the silicone film with a Mooney viscosity of approximately 45;

(C) the **fabric** web has been contacted with a treating bath comprising a swelling agent and a base and the treating bath has been heated to alter the **fabric** , and then the treating bath has been acidified and the **fabric** contacted with a hydrophilic polymer;

(D) an additional step of coating the exposed, surface of the silicone film with talc after attachment of the film to the **fabric** web and before curing of the silicone;

(E) the film is formed with the addition...

...on the Shore "A" scale;

(F) the step of providing a web comprises providing a **fabric** web which is a plain woven fabric having a porosity of less than 0,339 m(**sup** 3) per **min** . per m(**sup** 2) (ten **cubic** **feet** per **minute** per **square** yard), as measured by the **Frazier** Test;

(G) the step of providing a web comprises providing a **fabric** web which is a plain woven fabric having

a porosity of less than 0,339 m(**sup** 3) per **min** . per m(**sup** 2) (ten **cubic** **feet** per **minute** per **square** yard), as measured by the Frazier Test, and

a griege weight of approximately 78 g/m(**sup** 2) (2.3 ounces per square yard),

the **warp** yarns and filling yarns have a number of approximately 7,8 g/km (denier of...

...cm (86 picks per inch);

(H) the step of providing a web comprises providing a **fabric** web which is a plain woven fabric having

a porosity of less than 0,339 m(**sup** 3) per **min** . per m(**sup** 2) (ten **cubic** **feet** per **minute** per **square** yard), as measured by the Frazier Test, and

a griege weight of approximately 78 g/m(**sup** 2) (2.3 ounces per square yard),

the **warp** yarns and filling yarns have a number of approximately 7,8 g/km (a denier...

...approximately 34 picks per cm (86 picks per inch), and

the finished weight of the **fabric** substrate is approximately 88 g/m(sup 2) (2.6 ounces per square yard), and...

...on the Shore "A" scale;

(I) the step of providing a web comprises providing a **fabric** web which

the **warp** yarns are 70/34 false twist, set yarn and

the filling yarns are 70/68...

34/3,K/52 **(Item 52 from file: 348)**
DIALOG(R)File 348:EUROPEAN PATENTS

00461437
Polymeric composition for the absorption of proteinaceous fluids
Polymermassen zur Absorption von proteinartigen Flussigkeiten
Compositions de polymeres pour l'absorption de fluides proteiques
PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 456136 A2 911113 (Basic) =(US)5241009
EP 456136 A3 930203
EP 456136 B1 020320
APPLICATION (CC, No, Date): EP 91107230 910503;
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DESIGNATED STATES: BE; DE; ES; FR; GB; IT; NL; SE
INTERNATIONAL PATENT CLASS: **A61L-015/24** ; **A61L-015/28**
ABSTRACT WORD COUNT: 107
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Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPABF1	1481
CLAIMS B	(English)	200212	2339
CLAIMS B	(German)	200212	2166
CLAIMS B	(French)	200212	2558
SPEC A	(English)	EPABF1	6074
SPEC B	(English)	200212	6244
Total word count - document A			7555
Total word count - document B			13307
Total word count - documents A + B			20862

INTERNATIONAL PATENT CLASS: **A61L-015/24** ...

... **A61L-015/28**

...SPECIFICATION skilled in the art. The use of such materials in personal care products such as **diapers** , feminine **napkins** , adult incontinent products and the like is similarly well known. As a general rule, such...

...U.S. Patent 4,055,184, issued October 25, 1977, is directed to an absorbent **pad** comprising a finely divided mixture of a hydrolyzed starch/polyacrylonitrile graft copolymer in acidic form and a nontoxic water-soluble basic **material** . The presence of the basic **material** is described as increasing the liquid absorption capacity of the **pad** .
Thus, it is seen that certain polymeric compositions or structures are known, which compositions or...

...of absorption; thus rendering it particularly well suited for use in products such as feminine **napkins** , **wound dressings** and the like. Further, it is desired to provide an absorbent polymeric composition specifically adapted...

...It is further desired to provide an absorbent personal care product, such as a feminine **napkin** , which product contains an absorbent polymer specifically adapted to absorb proteinaceous fluids and having an...Blood Absorption Capacity. The polymeric composition to be tested is provided in granular form. The **material** is sifted on US standard size screen such that it is passed by a 50 **mesh** screen and retained on a 100 **mesh** screen. Thus, the particles have a maximum cross-sectional dimension of between about 150 and 300 microns. During the test, the polymeric composition is contained within a **porous** , heat-sealable paper-like **material** having a basis weight of about 30 grams per **square meter** , a thickness of about 6 mils, and a **porosity** such that the **material** will pass about 170 **cubic feet** of air per **minute** per **square foot** at a pressure of 0.5 pounds per **square inch** , which is commercially available from the Kimberly-Clark Corporation under the trade designation K-C-542 Berkshire Heat Seal. Specifically, the paper-like **material** is cut into 3 inch by 6 inch strips, folded in half lengthwise, and heat...

...polymeric composition to be tested is inserted into the pouch formed by the paper-like **material** and the third side is sealed. A control pouch is prepared as described except it...surface of the pouch and are then set flat. The pouches are placed in a **mesh** holder designed to keep the pouches submerged in a generally horizontal orientation during its exposure to the blood. The **mesh** holder is lowered into the warmed bovine blood and allowed to swell for the desired period of time. At the end of the desired period of time, the **mesh** holder is removed from the bovine blood and the samples allowed to drain for one...

...laboratory blender and separated on US standard screens so that it passes through a 20 **mesh** screen and is retained on a 100 **mesh** screen (150-850 microns). This sample is then postneutralized to the desired degree.

The postneutralization...high initial capacity (rate) due to their vastly increased surface area per unit volume of **material** .

The blood-swellable, generally blood-insoluble polymeric compositions described are particularly well suited for use in products intended to absorb proteinaceous fluids. Exemplary of such products are feminine **napkins** , **wound dressings** , hospital gowns, drug delivery devices, biotechnology applications such as concentration of proteins, and the like.

When used in a feminine **napkin** , the feminine **napkin** will suitably comprise an outer generally moisture-impermeable cover, an absorbent structure containing the polymeric...

...of polyethylene or polypropylene, or the like. The absorbent structure may comprise a matrix of **fibers** , such as cellulosic **fibers** , or may be a mixture of cellulosic **fibers** and meltblown synthetic **fiber** containing from about 0 to about 100 percent of synthetic meltblown **fibers** , such as polyethylene or polypropylene **fibers** . The preferred cellulosic **fiber** is wood pulp fluff. When synthetic **fibers** are present in the absorbent structures, the synthetic **fibers** are generally present in an amount of from about 1 to about 95 weight percent...

...of the absorbent structure. The body side liner is suitably formed from a nonwoven synthetic **fiber** such as spunbonded polyester or the like.

Exemplary of suitable feminine **napkins** are those described in U.S. Patents 4,315,507 issued to Whitehead; 3,881...

...SPECIFICATION skilled in the art. The use of such materials in personal care products such as **diapers** , feminine **napkins** , adult incontinent products and the like is similarly well known. As a general rule, such...

...U.S. Patent 4,055,184, issued October 25, 1977, is directed to an absorbent **pad** comprising a finely divided mixture of a hydrolyzed starch/polyacrylonitrile graft copolymer in acidic form and a nontoxic water-soluble basic **material** . The presence of the basic **material** is described as increasing the liquid absorption capacity of the **pad** .

EP-A-050 375 discloses a highly absorbent resin which is essentially a polyamine-crosslinked...

...of absorption; thus rendering it particularly well suited for use in products such as feminine **napkins** , **wound dressings** and the like, to provide an absorbent polymeric composition specifically adapted to absorb proteinaceous fluids...

...and polypeptide solutions, and to provide an absorbent personal care product, such as a feminine **napkin** , which product contains an absorbent polymer specifically adapted to absorb proteinaceous fluids and having an ...Blood Absorption Capacity. The polymeric composition to be tested is provided in granular form. The **material** is sifted on US standard size screen such that it is passed by a 0.297 mm (50 **mesh**) screen and retained on a 0.149 mm (100 **mesh**) screen. Thus, the particles have a maximum cross-sectional dimension of between about 150 and 300 (mu)m (microns). During the test, the polymeric composition is contained within a **porous** , heat-sealable paper-like **material** having a basis weight of about 30 grams per square meter, a thickness of about 25.4 (mu)m (6 mils), and a **porosity** such that the **material** will pass about 4.76 cm3) (170 **cubic feet**) of air per **minute** per **square foot** at a pressure of 3.4 kPa (0.5 pounds per **square** inch), which is commercially available from the Kimberly-Clark Corporation under the trade designation K-C-542 Berkshire Heat Seal. Specifically, the paper-like **material** is cut into 7.6 cm (3 inch) by 15.2 cm (6 inch) strips...

...polymeric composition to be tested is inserted into the pouch formed by the paper-like **material** and the third side is sealed. A control pouch is prepared as described except it...

...surface of the pouch and are then set flat. The pouches are placed in a **mesh** holder designed to keep the pouches submerged in a generally horizontal orientation during its exposure to the blood. The **mesh** holder is lowered into the warmed bovine blood and allowed to swell for the desired period of time. At the end of the desired period of time, the **mesh** holder is removed from the bovine blood and the samples allowed to drain for one...and separated on US standard screens so that it passes through a 0.84 (20 **mesh**) screen and is retained on a 0.149 (100 **mesh**) screen (150-850 (mu)m (microns)). This sample is then postneutralized to the desired degree...high initial capacity (rate) due to their vastly increased surface area per unit volume of **material** .

The blood-swellable, generally blood-insoluble polymeric compositions described are particularly well suited for use in products intended to absorb proteinaceous fluids. Exemplary of such products are feminine **napkins** , **wound dressings** , hospital gowns, drug delivery devices, biotechnology applications such as concentration of proteins, and the like.

When used in a feminine **napkin** , the feminine **napkin** will suitably comprise an outer generally moisture-impermeable cover, an absorbent structure containing the polymeric...

...polypropylene, a foam of polyethylene or polypropylene. The absorbent structure may comprise a matrix of **fibers** , such as cellulosic **fibers** , or may be a mixture of cellulosic **fibers** and meltblown synthetic **fiber** containing from 0 to 100 percent of synthetic meltblown **fibers** , such as polyethylene or polypropylene **fibers** . The preferred cellulosic **fiber** is wood pulp fluff. When synthetic **fibers** are present in the absorbent structures, the synthetic **fibers** are generally present in an amount of from 1 to 95 weight percent based on...

...of the absorbent structure. The body side liner is suitably formed from a nonwoven synthetic **fiber** such as spunbonded polyester.

Exemplary of suitable feminine **napkins** are those described in U.S. Patents 4,315,507 issued to Whitehead; 3,881...

...CLAIMS product according to claim 28 wherein said absorbent structure further comprises an absorbent matrix of **fibers** in which said polymeric composition is dispersed in the form of solid, non-agglomerated discrete particles.

30. The absorbent product according to claim 28 wherein said absorbent matrix of **fibers** comprises a mixture of cellulosic **fibers** and meltblown synthetic polymeric **fibers** .
31. The absorbent product according to claim 28 wherein said carboxyl group-containing monomer is...

...CLAIMS product according to claim 20 wherein said absorbent structure further comprises an absorbent matrix of **fibers** in which said polymer is dispersed in the form of solid, non-agglomerated discrete particles.

22. The absorbent product according to claim 21 wherein said absorbent matrix of **fibers** comprises a mixture of cellulosic **fi**bers and meltblown synthetic polymeric **fibers** .
23. The absorbent product according to any of claims 20 to 22 wherein said carboxyl...product according to claim 20 wherein said absorbent structure further comprises an absorbent matrix of **fibers** in which said polymer is dispersed in the form of solid, non-agglomerated discrete particles.

22. The absorbent product according to claim 21 wherein said absorbent matrix of **fibers** comprises a mixture of cellulosic **fibers** and meltblown synthetic polymeric **fibers** .
23. The absorbent product according to any of claims 20 to 22 wherein said carboxyl...

34/3,K/124 (Item 124 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00859042 **Image available**
A PROTECTIVE COVER ARTICLE
HOUSSE DE PROTECTION
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English Abstract
A nonwoven **fabric** protective cover article disclosed comprises a top surface, a bottom surface, at least one edge, and at least one weight joined thereto. The nonwoven **fabric** of the protective cover article is hydrophobic and has a basis weight from between about 0.15 osy to about 8.0 osy, an air **permeability** from about 60 **ft " sup " 3 / min / ft " sup " 2** to about 110 **ft " sup " 3 / min / ft " sup " 2** , and stain resistance from about 4 to about 5 for blueberry, instant coffee, gravy, and...

=(US)6754919
24 MAY 2001 FILE DATE

French Abstract

Cette invention a trait a une housse de protection en **textile** non-tisse comprenant un dessus, un fond, au moins un cote et au moins un lest. Le **textile** non-tisse de cette housse de protection est hydrophobe et sa masse surfacique comprise entre 0,15 et 8,0 once par yard carre environ, sa **permeabilite** a l'air etant comprise entre 60 **ft " sup " 3 / min / ft " sup " 2** et 110 **ft " sup " 3 / min / ft " sup " 2** environ et sa resistance aux taches, notamment aux taches de myrtilles, de cafe en poudre...

Detailed Description

... protective cover article such as a ground cover blanket, a tablecioth, a beach towei, changing **pad** , rug, mat, or a placemat intended for everyday use. Consumers are aiways looking for economical...

...resilient for everyday use.

Currently, such products are typically made from durable (reusable) pieces of **fabric** , such as **cloth** or **woven fabric** , cut from a larger bolt of the **fabric** and affected into the specific products. Other such products are made from disposable paper materials. In both cases, the **fabrics** or paper **fabrics** are typically hydrophilic.

While the products made from the durable **fabrics** can withstand exposure to water or other fluids, the products made from the paper materiais...

...to fluids, the materials typically (inverted exclamation mark)ose the qualities of softness, flexibility, and **cloth** -iike feel and appearance desired in blankets, toweis, and other protective cover articles.

Another concern...

...used at a picnic. A plastic or rubber coating is typically applied to the durable **fabrics** or paper materials to provide a hydrophobic quality to the products. However, some of the other qualitiesof the **fabrics** or materials are lost as discussed above. In addition, the durable **fabrics** or paper materials portions of the current products are still hydrophilic, so the (inverted exclamation...

...in outdoor situations. The paper materiais lack the resilience, weight and drapability of the durable **fabrics** , such that the paper materials typically do not provide products having sufficient quality for outdoor ...

...washable and disposable protective cover articles. There is also a need to provide soft, flexible, **cloth** -like, and inexpensive protective cover articles. In adelition, the protective cover articles need to be...

...improved economical and resilient protective cover article, including ground cover blankets, tablecloths, beach towels, changing **pads** , rugs, mats, and placemats, and the like has been discovered.

One embodiment of the present invention is a **fabric** protective cover article comprising a top surface, a bottom surface and, at least one edge. The **fabric** of the protective cover article is hydrophobic and has a basis weight from between about...

...blueberry, instant coffee, gravy, and wine.

Another embodiment of the present invention is a nomoven **fabric**

protective cover article comprising a top surface, a bottom surface and, at least one edge. The nomoven **fabric** of the protective cover article is hydrophobic and has a basis weig ht from between about 0. 1 5 osy to about 8. 0 osy, an air
2
permeability from about 60 **ft** 31M in1ft2 to abouţ 1 1 0 ft3/Min1ft2 , and stain resistance from about 4...

...each term or phrase below will include the following meaning or meanings.

3
(a) "Air **permeabie** " or "Breathable" means **fabrics** which are capable of acting as a barrier to particulate matter, water, and other liquids yet which allow water vapor and air to pass therethrough. Such **fabrics** may be referred to as `breathable barriers." Articies or products made using breathable **fabrics** are generally more comfortable to wear or use since the migration of water
vapor through the **fabric** helps to reduce and/or eliminate discomfort resulting from excess moisture trapped against the skin.

(b) Sonded carded **fabric** or web", `bonded carded web", and `bonded carded **fabric** ` refer to **fabric** or webs made from staple **fibers** which are
sent through a combing or carding unit, which individualizes and aligns the staple **fibers** in the machine direction to form a generally machine directionoriented fibrous nonwoven web. Such **fibers** are usually purchased in bales which are placed in a picker which separates the **fibers** prior to the carding unit. Once the web or **fabric** is formed, (inverted exclamation mark)t is then bonded by one or more of several...bonding method is powder
bonding, wherein a powdered adhesive is distributed through the web or **fabric** and then activated, usually by heating the **fabric** and adhesive with
hot air. Another suitable bonding method is pattern bonding, wherein heated calendar rolis or ultrasonic bonding equipment are used to bond the **fibers** together, usually in a localized bond pattem, though the **fabric** can be bonded across its entire surface if so desired. Another suitable and wellknown bonding method, particularly when using bi-component staple **fibers** , is through-air bonding.

(c) `Cross machine direction` ("CD") means the direction or axis of the product or **material** generally perpendicular to the machine direction.

(d) `Disposable` includes being discarded of after use, and...

...inverted exclamation mark)c" is used to refer to al(inverted exclamation mark) of the **woven** , **knitted** , and nonwoven webs.

4
Tlexible` refers to materials or **fabrics** that are compliant and readily conform to the general shape and contours of an individuaUs body.

(g) "Gatherable` **material** is one which, when bonded to a web with the latter
under tension, will gather...

...accommodate contraction of the web upon release of the tensioning forces.
(h) `I-lydrophilic" describes **fibers** or surfaces of **fibers** that are

wetted by the
aqueous liquids in contact with the **fibers** . The degree of wetting of the
materials can be described in terms of contact angles...

...the liquids and materials involved. Equipment and techniques
suitable for measuring the wettability of particular **fiber** materials or blends
of **fiber** materials can be provided by a Cahn SFA-222 Surface Force
Analyzer System. When measured with this system, **fibers** having contact
angles less than 900 are designated "wettable", Le., "hydrophilic", and **fibers**
having contact angles greater than 901 are "nonwettable`, Le., "hydrophobic".

(i) `Joining", 'Ioin", 'Ioined", or...

...or refastenably joined together.

"Machine direction` ("MD") means the direction in which the product or **material** is produced or the axis of the **fabric** corresponding to the direction of the machine operations.

(k) "Meltblown **fibers** " means **fibers** formed by extruding a molt en thermoplastic **material** through a plurality of fine, usually circular, die capillaries as molten threads or filaments into...

...5
usually hot gas (e.g. air) streams which attenuate the filaments of molten thermoplastic **material** to reduce their diameter, which may be to microfiber diameter. Thereafter, the meltblown **fibers** are carried by the high velocity
gas stream and are deposited on a collecting surface to form a web of randomly disbursed meltblown **fibers** . Such a process is disclosed, for example in U.S. Patent No. 3,849,241 issued to Butin et al. which is incorporated herein by reference. Meltblown **fibers** are microfibers which
may be continuous or discontinuous, are generally smaller than 1 0 microns...

...laminate may be made by sequentially depositing
onto a moving forming belt first a spunbond **fabric** (inverted exclamation mark)ayer, then a meltblown **fabric** layer and last another spunbond (inverted exclamation mark)ayer and then bonding the laminate in a manner described below. Alternatively, the **fabric** layers may be made individually, collected in rolls, and combined in a separate bonding step.

Such **fabrics** usually have a basis weight of from about 0.1 osy to about 12 osy...

...may different configurations and may include
other materials like films or coform materials.

(m) "Nonwoven **fabric** or web", "nonwoven web", and "nonwoven **fabric** ` mean a web having a structure of individual **fibers** or threads which are interlaid, but not in an identifiable manner as in a **knitted** **fabric** . Nonwoven
fabrics or webs have been formed from many processes such as, for
. 6

example, meltblowing processes, spunbonding processes, and bonded carded web processes. The basis weight of nonwoven **fabrics** is usually expressed in ounces of **material** per square yard (osy) or grams per square meter (gsm) and the **fiber** diameters are usually expressed in microns.
(n) Trotective cover` means a cover for floor coverings, table **cloths** , beach toweIs, and picnic area ground covers.

(o) "Polymer" generally includes but is not limited...

...limited, the term "polymer" shall include al(inverted exclamation mark) possible geometrical configuration of the **material** . These configurations include, but are not limited to isotactic, syndiotactic and random symmetries.

(p) "Spunbonded **fibers** ' refers to small diameter **fibers** which are formed by extruding molten thermoplastic **material** as filaments from a plurality of fine, usually circular capillaries or spinneret with the diameter...615 issued to Dobo et al., all of which are incorporated herein by
reference. Spunbond **fibers** are generally not tacky when they are deposited onto a collecting surface. Spunbond **fibers** are generally continuous and have average diameters (from a sample of at least 1 0...

...1 0 and about 20 microns.

(q) "Stitchbonded" means, for example, the stitching of a **material** in accordance with U.S. Patent No. 4,891,957 issued to Strack et al...

...which are incorporated herein by
reference.

(r) `Stretch bonded laminate" ("SBL") refers to a composite **material** having at least two layers in which one (inverted exclamation mark)ayer is a gatherable...

...the gatherable (inverted exclamation mark)ayer js gathered.

(s) `Thermal point bonding` involves passing a **fabric** or web of **fibers** to be bonded between a heated calender rol[and an anvil roll. The calender rol...

...exclamation mark) is usually, though not aiways, pattemed in some way so that the entire **fabric** is
not bonded across its entire surface. As a result, various pattems for calender rolis...

...common pattems
include a diamond pattern with repeating and slightly offset diamonds and a wire **weave** pattem looking as the name suggests, e.g. like a window screen,
8
Typically, the...

...bonding area varies from around 1 0% to around 30% of the area of the **fabric** laminate web. As in weil known in the art, the spot bonding holeis the laminate layers together as weil as imparts integrity to each individual layer by bonding filaments andlor **fibers** within each (inverted exclamation mark)ayer.

(t) `Through air bonding` ("TAB") means a process of bonding a nonwoven bicomponent **fiber** web in which air whioh is sufficiently hot to melt one of the polymers of which the **fibers** of the web are made is forced through the web.

The air velocity is between...

...component to accomplish bonding, it is restricted to webs with two components such as bicomponent **fiber** webs .

(u) `Ultrasonic bonding" means a process performed, for example, by passing the **fabric** between a sonic hom and anvil rol(inverted exclamation mark) as illustrated in U.S...

...washable and disposable type articles. The protective cover article 14 is preferably soft, flexible, and **cloth** -lilke. The protective cover articles 14 are also preferably light weight, easy to store, and...

...articles 14 include, but are not limited to, ground cover blankets, tablecloths, beach toweis, changing **pads** , rugs, mats, and placernats, and the like.

9
One embodiment of the present invention is...Figures 7 and 8, respectively. The following description of materials from which the web of **fabric** 15 may be formed woulcl also be used for the materials to form the top surface 11 and the bottom surface 13 of a multi-layer laminate web of **fabric** 15.

The web of **fabric** 15 may be any suitable **material** , such as a **woven material** , a nonwoven **material** , a fibrous or a polymeric film **material** and may be, although they need not necessarily be, an elastic **material** or of a stretchable nature. Suitable fibrous webs may utilize any suitable natural andlor synthetic **fibers** , for example, **woven** or nonwoven webs of **fibers** made of acrylic polymers,
10
polyester, polyamide, rayon, glass, polyolefins, e.g., polyethylene and polypropylene...

...as blends or combinations of any two or more of the foregoing. The web of **fabric** 15 may also comprise polymeric film layers such as polyethylene, polypropylene, polyamide, polyester, acrylic polymers, and compatible mixtures, blends, and copolymers thereof.

The web of **fabric** 15 may be (inverted exclamation mark)(inverted exclamation mark)quid pervious, permitting liquids to readily...

...thickness, or impervious, resistant to the penetration of liquids into its thickness. The web of **fabric** 15 may also be constructed such that it is breathable, non-breathable, or a combination thereof. The web of **fabric** 15 may be made from a wide range of materials, such as natural **fibers** (e.g. wood or cotton **fibers**), synthetic **fibers** (e.g. rayon, polyester or polypropylene **fibers**), or from a combination of natural and synthetic **fibers** or reticulated foams and apertured plastic films. The web of **fabric** 15 may be **woven** , nonwoven, or film such as spunbonded, carded, or the like. A suitable web of **fabric** 15 may carded, and thermally bonded by rheans weil known to those skilled in the **fabric** art.

Alternatively, the web of **fabric** 15 may be derived from a spunbonded

web.

In a desired embodiment, the web of **fabric** 15 is spunbonded polypropylene
nonwoven, meltblown polypropylene nonwoven, and spunbonded polypropylene nonwoven laminate (SIVIS). The...

...meltblown nonwoven. A pigment such as titanium dioxide
may be incorporated into the web of **fabric** 15. Such a spunbonded meltblown nonwoven laminate **material** is available from Kimberly-Clark Corporation, Rosweil, GA. The basis weight of the SIVIS **material** may vary from about 0.4 osy to about 1.0 osy.

In other desired embodiments, the web of **fabric** 15 is spunbonded polypropylene nonwoven with a wire- **weave** bond pattern having a grab tensile of 1 9 pounds as measured by ASTM D1682 and D1776, a Taber 40 cycle **abrasion** rating of 3.0 as measured by ASTM D1 175 and Handle-O-Meter MID...

...R82) and CID value of 4.4 grams using TAPPI method T402. Such a spunbonded **material** is available from Kimberly-Clark Corporation, Rosweil, GA. The web of **fabric** 15 has a weight of from about 0.5 osy to about 2.5 osy, desirably about 1.5 osy.

The web of **fabric** 15 may be constructed of a single spunbonded polypropylene nonwoven web having a basis weight...

...osy (51 gsm). In the structure of the protective cover article 14, the web of **fabric** 15 desirably comprises a **material** having a basis weight of from about 0.5 osy (1 7 gsm) to about...

...22, or any other portions of the protective cover article 14.

Additionally, the web of **fabric** 15 or portions thereof, can be made of materials having an **abrasion** resistant characteristic.

The web of **fabric** 15 may be any soft and flexible sheet. The web of **fabric** 15 may permit submersion in fresh water or salt water or treated water (chiorinated or brominated) and still retain its integrity. The web of **fabric** 15 may comprise, for example, a nonwoven web or sheet of a spunbonded, meltblown, or...

...such as polypropylene, polyethylene, polyesters, or the like, or a web of natural and synthetic **fibers** or filaments such as cotton and rayon. The web of **fabric** 1 5 may be selectively embossed or **perforated** with discrete slits or holes extending therethrough.

The web of **fabric** 15 may be further dyed, pigmented, or imprinted with any suitable color. Desirably, the web of **fabric** 15 is dyed, pigmented, or printed with a **material** which does not irritate or bleed the color onto the skin of the user. The web of **fabric** 15 may be naturally hydrophobic or may be treated to make it hydrophobic if so desired.

For embodiments wherein the web of **fabric** 15 is a multi-layer laminate or structure, both the bottom surface 13 and the...

...which the bottom surface 13 may be formed may also be used to form the **material** of the top surface 1 1.

The bottom surface 13 may be any suitable gatherable **material** , such as

a The bottom surface 13 may be liquid pervious, permitting liquids to readily...

...bottom surface 13 may be made from a wide range of materials, such as natural **fibers** (e.g. wood or cotton **fibers**), synthetic **fibers** (e.g.

rayon, polyester, or polypropylene **fibers**), or from a combination of natural and synthetic **fibers** or reticulated foams and apertured plastic films. The bottom surface 13 may be **woven** , nonwoven, or film such as spunbonded, carded, or the like. A suitable **material** for the bottom surface 13 may be carded, and thermally bonded by means weIl known to those skilled in the **fabric** art.

Alternatively, the bottom surface 13 may be derived from a spunbonded web. In a...

...the bottom surface 13 and the top surface 1 1. Such spunbonded meltbiown nonwoven laminate **material** is available from Kimberly-Clark Corporation, RoswelI, GA. The basis weight of the SIVIS **material** may vary from about 0.4 osy to about 1.0 osy.

In other desired embodiments, the bottom surface 13 is spunbonded polypropylene nonwoven with a wire- **weave** bond pattern having a grab tensile of 1 9 pounds as measured by ASTM D1682 and D1 776, a Taber 40 cycle **abrasion** rating of 3.0 as measured by ASTM D1 175 and Handle-O-Meter MID...

...75(R82) and CID value of 4.4 grarns using TAPPI method T402. Such spunbonded **material** is available from Kimberly-Clark Corporation, Rosweil, GA. The bottom surface 13 has a weight...

...the structure of the protective cover article 14, the bottom surface 13 desirably comprises a **material** having a basis weight of from about 0.5 osy (1 7 gsm) to about...

...Additionally, the bottom surface 13 or portions thereof, can be made of materiais having an **abrasion** resistant characteristic.

The top surface 1 1 may be any soft and flexible sheet. The...

...such as polpropylene, polyethylene, polyesters, or the like, or a web of natural and synthefic **fibers** or filaments such as cotton and rayon. The top surface 11 may be selectively embossed...

...the structure of the protective cover articie 14, the top surface 11 desirably comprises a **material** having a basis weight of from about 0.5 osy (1 7 gsm) to about...

...the top surface 1 1 or portions thereof, can be made of materials having an **abrasion** resistant characteristic.

The bottom surface 13. and the top surface 1 1 may be further...

...different. Desirably, the bottom surface 1 1 is either dyed, pigmented, or printed with a **material** which does not irritate or bleed the color onto the skin of the user.

Additionally, the web of **fabric** 15 may comprise monocomponent or bicomponent spunbond **fibers** . Generally, methods for making spunbond **fiber** nonwoven or **woven** webs of **fabric** 1 5 include extruding molten

thermoplasic polymer through a spinneret, quenching the filaments, and then...

...filaments with a stream of high velocity air to form a web of randomly arrayed **fibers** on a collecting surface or other method of handling to form a **woven** web of **fabric** 15. As examples, methods for making the nonwoven webs of **fabric** 15 are described in U.S. Patent No. 4,692,618 issued to Dorschner et...

...Matsuki et al., al(inverted exclamation mark) of which are incorporated herein by reference.

Monocomponent **fibers** may be formed from one or more extruders using only
one polymer. This is not meant to exclude **fibers** formed from one polymer to which small amounts of additives have been added for coloration...

...less than 5 weight percent and more typically
1 5
about 2 weight percent.

Bicomponent **fibers** , also referred to as biconsitutuent, conjugate, or multiconstituent **fibers** , are discussed in, for example, U.S. Patent No. 5,108,827 issued to Gessner...

...al., al(inverted exclamation mark) of which are incorporated herein by reference. For two component **fibers** , the polymers may be present in ratios of 75125, 50150, 25175 or any other desired ratios. Such **fibers** are also discussed in the textbook Polymer Blends and Composites by John A. Manson and...

...of New York, ESN 0 30831 2, at pages 273 through 277.

Such rnulticomponent spunbond **fibers** may be formed from at least two polymer streama but spun together to form a unitary **fiber** . The individual components comprising the multicomponent **fiber** are usually different polymers and are arranged in distinct zones or regions that extend continuously along the length of the **fibers** . The configuration of such **fibers** can vary and cornmonly the
individual components of the **fiber** can be positioned in a side-by-side arrangement, sheathlcore arrangement, pie or wedge arrangement, islands-in-sea arrangement and so forth. Multicomponent **fibers** and methods of making the same are known in the art, an by way of...

...004 issued to Cook, all of which are incorporated herein by reference.

The web of **fiber** 15 may also comprise hollow **fibers** as discussed in U.S.

Patent Application filed on January 27, 1 999 for Detamore...
...protective cover articies 14 may be made from a single sheet of the web of **fabric** 15 or pieces or strips of the web of **fabric** 15 to form the protective cover articles 14.

The protective cover article 14 desirably has...

...Many of the conventional articies that provide hydrophobic characteristics do so at the expense of **permeability** . For example, rubber backed **woven** blankets that can be used at the beach are not

comfortable for use as a...

...the user because of the rubber portion of the blanket. In adelition, such rubber backed **woven** blankets can become water- and sand-logged
17
in the **woven** portion of the blanket making use and handling of the blanket very difficult and rnessy.

The protective cover article 14 may also be resistant to **abrasion** . This is important, not only for appearance characteristics, but for the protective characteristics of the protective cover article 14. For example, conventional **woven** blankets show wear due to **abrasion** encounter during normal use, such as at a beach. Those worn areas are more likely...be resistant to pilling and fuzzing for appearance as weIl as cornfort during use. Conventional **woven** blankets typically used at the beach are susceptible to pilling and fuzzing. The pilling and...

...exclamation mark)t is desirable that the protective cover article 14 be constructed of a **fabric** 15 that The protective cover article 14 should be able to resist many of the...

...and storage characteristics.

18
The protective cover article 14 may also include weights or weighted **material** devices 24 known in the art, including, but not limited to, metallic or nonmetallic objects...

...objects, plastic objects, and the like. (See Figures 1 and 2). The weights or weighted **material** devices 24 may be used to aid in maintaining the position of the protective cover article 14. The weights or weighted **material** devices 24 may take any shape known in the art and as desired for use in the protective cover article 14. The placement and the number of weights or weighted **material** devices 24 used in a protective cover article 14 may vary depending upon intended use...
...In other embodiments, it may be desirable for the weights 24 be encased in a **fabric** cover 26 prior to joining to the protective cover article 14 as shown in Figure 2. The **fabric** cover 26, containing the weight 24, may be joined to the protective cover article 14...

...not limited to adhesives, stitching, thermal bonding, heat sealing, ultrasonic bonding, or the Nke. The **fabric** covers 26, containing the weights 24, may be refastenably or permanently joined to the protective ...

...1 2) inches apart.

TEST METHODS
Test Method 1: Basis Weight.

The basis weight of **fabric** is measured using the ASTM D 3776 The testing is per-formed in standard atmospheric...

...osy and gsm.

(inverted exclamation mark)t is desirable that the basis weight of the **fabric** of the protective cover article range between from about 0. 1 5 osy to about...

...to about 2.2 osy, or about 1.5 osy.

20
Test Method 2: Air **Permeablifity** .

The air **permeability** of **fabric** is measured using the ASTM D 737 The testing is performed in a conditioned atmosphere...Machine from Frazier Precision Instrument Co. as the testing apparatus. The average air flow through **fabric** is reported in ft3lMin1W.

(inverted exclamation mark)t is desirable that the air **permeability** of the **fabric** of the protective cover article range between from about 60 ft3lMin1ft2 to about 1 1...

...Imin1ft2, or from about 85 ft3lM in1ft2 to about go ft3lM in1ft2.

Test Method 3: **Abrasion** Resistance - Flex.

The **abrasion** resistance of **fabric** is measured using the ASTM D 3885 - 99
in the **warp** direction of the materiallfabric and the ASTM D 3885 - 99 in the filling direction of...

...H.) using a CSI Stoll QM Universal Wear Tester (Model CS-22C) with a Flex **Abrasion** Attachment as the testing apparatus. The apparatus is set at a tension load of 2...

...and a balance head load of 0.5 lbs. The average flex resistances in the **warp** (MID) and filling (CID) directions are reported in the number of cycles required to reach failure.

(inverted exclamation mark)t is desirable that the **abrasion** resistance flex of the **fabric** of the protective cover article in the **warp** direction range between from about 1 00 cyeles to about 300 cycles, from about 150...

...250 cycles, or about 200 cycles.

21
(inverted exclamation mark)t is desirable that the **abrasion** resistance flex of the **fabric** of the protective cover articie in the filling direction range between from about 40 cycles...
...or about 95 cycles.

Test Method 4: Colorfastness to Light.

The colorfastness to light of **fabric** is measured by exposing the **fabric** to 40 AATCC fading units of outdoor light and tested for light colorfastness according to...

...separate evaluators make visual evaluations of the color change of three specimens of each test **fabric** .

The average colorfastness is reported on a 1 - 5 scale with 5 representing no color...

...Scale For Color Change under AATCC Evaluation Procedure 1. The colorfastness to light of the **fabric** may be also evaluated instrumentally using a HunterLab (LabScan2 0145) spectrophotometer.

(inverted exclamation mark)t is desirable that the colorfastness to light of the **fabric** of the protective cover article range between from about 5 to about 4.5, from...

...about 5.

Test Method 5: Pilling Resistance - Random Tumble Method - Fuzz.

The pilling resistance of **fabric** is tested before laundering according to the ASTM D 3512 - 99. The test **fabric** is tested after laundering five times as set forth in the ASTM D 3512 - 99...

...at 2 psi. Two separate evaluators make visual evaluations of the fuzzing resistance of the **fabric** both before and after laundering five times. The average fuzzing resistance before and after five...

...very severe pilling or fuzz.

ft is desirable that the pilling resistance of the unfaundered **fabric** of the protective cover article range between from about 5 to about 3, from about...

...about 4 (inverted exclamation mark)t is desirable that the pilling resistance of the laundered **fabric** of the protective cover articie range between from about 5 to about 3, from about...

...3.5, or about 4
lt is desirable that the fuzzing resistance of the unlaundered **fabric** of the protective cover article range between from about 5 to about 3, from about...

...about 4 (inverted exclamation mark)t is desirable that the fuzzing resistance of the laundered **fabric** of the protective cover article range between from about 5 to about 3, from about...

...Test Method 6: Dimensional Change in Home Laundering.

The dimensional change during home laundering of **fabric** is tested after one laundering and after five launderings according to the ASTM D 135 - 95 in the **warp** direction of the **fabric** . The **fabric** is tested after one laundering and after five launderings as set forth in the ASTM D 135 - 95 in the filling direction of the **fabric / material** . Each laundering is performed in a conventional washing machine and dryer at the following settings...

...Agitation, and Low Tumble Dry (below 190 OF) using a standard AATCC laundry detergent. The **fabric** evaluation is performed in standard atmospheric conditions (70 +1- 2 OC, 65 +1- 2 % R.H.) The average percent change in dimensions of the **fabric** is measured after one laundering and after five launderings.

23
(inverted exclamation mark)t is desirable that the dimensional change after one home laundering **abrasion** of the **fabric** of the protective cover article in the **warp** direction range ...or about 2.5%. ft is desirable that the dimensional change after five home laundering **abrasion** of the **fabric** of the protective cover article in the **warp** direction range between from about 3.5% to about 4.5%, from about 3.75...

...0%.

(inverted exclamation mark)t is desirable that the dimensional change after one home laundering **abrasion** of the **fabric** of the protective cover article in the filling direction range between from about 1.5...

...5%. (inverted exclamation mark)t is desirable that the dimensional change after five home laundering **abrasion** of the **fabric** of the protective cover article in the filling direction range between from about 3.0...

...3.75%, or about 3.5%.

Test Method 7: Stain Resistance.

The stain resistance of **fabric** to the following stains is determined using the following materials.

Tea: Luzianne Tea, Reily Foods...

...Ketchup: Extra Thick Critic's Choice Tomato Ketchup, Amway Corp., Ada, Mi 49355-0001
The **fabrics** are exposed to the above materials and laundered five times according per ASTM D 4265...

...D 4265 - 98
stipulates three evaluators) make visual evaluations of the stain resistance of the **fabric** to the above materials. The average stain resistance of the **fabric** to each **material** is reported on a 1 - 5 scale with 5 representing no residue stain after five...
...inverted exclamation mark)t is desirable that the stain resistance to tea of the laundered **fabric** of the protective cover articie range between from about 4 to about 5, from about...

...inverted exclamation mark)t is desirable that: the stain resistance to blueberry of the laundered **fabric** of the protective cover articie range between from about 4 to about 5, from about...

...is 5.

lt is desirable that the stain resistance to beef blood of the laundered **fabric** of the protective cover articie range between from about 4 to about 5, from about...

...inverted exclamation mark)t is desirable that the stain resistance to wine of the laundered **fabric** of the protective cover article range between from about 4 to about 5, from about...

...exclamation mark)t is desirable that the stain resistance to instant coffee of the laundered **fabric** of the protective cover articie range between from about 4 to about 5, from about...
...or is 5.

ft is desirable that the stain resistance to mustard of the laundered **fabric** of the protective cover article range between from about 4 to about 5, from about...

...inverted exclamation mark)t is desirable that the stain resistance to gravy of the laundered **fabric** of the protective cover article range between from about 4 to about 5, from about...

...exclamation mark)t is desirable that the stain resistance to chocolate syrup of the laundered **fabric** of the protective cover article range between from about 4 to about 5, from about...

...exclamation mark)t is desirable that the stain resistance to grape juice of the laundered **fabric** of the protective cover article range between from about 4 to about 5, from about...

...inverted exclamation mark)t is desirable that the stain resistance to clay of the laundered **fabric** of the protective cover article range between from about 4 to about 5, from about...
...or is 5.

(t is desirable that the stain resistance to ketchup of the laundered **fabric** of the protective cover article range between from about 4 to about 5, from about...

...1996. An Atlas Launder-O-meter (model # LEF) is used to accelerate laundering the test **fabrics** . The conditions of testing are set per test number 2A in AATCC
testmethod61-1996: 491C...

...5 IF). Two separate evaluators make visual evaluations of the color change of the test **fabric** . The colorfastness to light of the **fabric** may be also evaluated instrumentally using a HunterLab (LabScan2 0145) spectrophotometer.

The average colorfastness, of the test **fabric** is reported on a 1 - 5 scale with 5 representing no color change after laundering...

...Procedure 1.

(inverted exclamation mark)t is, desirable that the colorfastness to light of the **fabric** of the protective cover article range between from about 5 to about 4.5; from...

...The hydrostatic water resistance (resistance to the penetration of water under low hydrostatic pressure of **fabric** is measured according to a Kimberly-Clark standard test method 4492. The two layers of nonwoven **material** are layered together so that the formation sides of each (ayer were touching each other (nonformation sides out). The two layers of test **fabric** are not stitched together. An Expulsion Press Die-Cutter with dies (TMI DGD, K-C...

...00) from Testing Machines, Inc. is used to cut six (6) inch diameter circular test **fabric** pieces.

Each six inch diameter pieces of the test **fabric** are mounted on a TEXTES
FX-3000 hydrostatic head tester (K-C item number 851229, part number FX-3000) form clamped down on the test head reservoir. The test **fabric** pieces are placed over the test head and clamped down so that a proper sea...

...exclamation mark) is formed with the test head around the entire edge of the test **fabric** pieces. The large, 1 00 CM2 test head , filled to the rim with purified water at 75 +1- 1 0 OF, is used for this test method. The test **fabric** piece is then subjected to a standardized water pressure, which was increased at a constant rate. The resistance of the

test **fabric** to the water pressure is measured in millibars as the hydrostatic head height reaches the...

...hydrostatic head height in millibars.

lt is desirable that: the hydrostatic water resistance of the **fabric** of the protective cover article range between from about 45.0 to about 55.0 ...

Claim
A nomoven **fabric** protective cover article comprising:
a. a top surface;
b. a bottom surface;
c. at least one edge; and,
d. at least one weight joined thereto,
wherein the nomoven **fabric** is hydrophobic and has a basis weight from between about 0. 1 5 osy to...

...about 4 to about 5 for blueberry, instant coffee, gravy, and wine.

2 The nomoven **fabric** protective cover article of Claim 1 wherein at least one weight is joined adjacent the edge of the protective cover articie.

3 The nonwoven **fabric** protective cover article of Claim 1 wherein at least one weight is joined in at...

...protective cover article not adjacent the edge of the protective cover article.
4 The nomoven **fabric** protective cover article of Claim 1 wherein at least one weight is joined to the top surface of the protective cover article.

5 The nomoven **fabric** protective cover article of Claim 1 wherein at least one weight is joined to the bottom surface of the protective cover article.

6 The nomoven **fabric** protective cover article of Claim 1 wherein at least one weight is encased in a **fabric** cover prior to joining to the protective cover article.

7 The nomoven **fabric** protective cover articie of Claim 1 wherein ali weights are encased in **fabric** cover prior to joining to the protective cover article.
30
. The nonwoven **fabric** protective cover article of Claim 1 wherein at least one weight is permanently joined to the protective cover article.

9 The nonwoven **fabric** protective cover article of Claim 1 wherein all weights are permanently joined to the protective cover article.
1 0. The nonwoven **fabric** protective cover article of Claim 1 wherein the
nonwoven **fabric** has a stain resistance from about 4 to about 5 for tea, clay, ketchup, beef blood, mustard, chocolate syrup, and grape juice.
The nonwoven **fabric** protective cover article of Claim 1 wherein the nonwoven **fabric** has a colorfastness to light from about 4.5 to about 5.

12 The nonwoven **fabric** protective cover article of Claim 1 wherein the nonwoven **fabric** has a pilling resistance before laundering from about 3 to about 5 and a pilling resistance after laundering from about 3 to

about 5.

13 The nonwoven **fabric** protective cover article of Ciaim 1 wherein the nonwoven fabr.ic has dimensional change after...

...dimensional change after five launderings of about 4.5 percent or less.

14 The nonwoven **fabric** protective cover article of Ciaim 1 wherein the nonwoven **fabric** has an **abrasion** resistance flex in the **warp** direction from about 1 00 cycles to about 300 cycles and an **abrasion** resistance flex in the filling direction from about 40 cycles to 140 cycles.

15 The nonwoven **fabric** protective cover article of Claim 1 wherein the nonwoven **fabric** has a colorfastness to laundering from about 4.5 to about 5.

31

6 The nonwoven **fabric** protective cover article of Claim 1 wherein the nonwoven **fabric** has a hydrostatic water resistance from about 45.0 millibars to about 55.0 millibars. 1 7. The nonwoven **fabric** protective cover article of Claim 1 further comprising more than one (inverted exclamation mark)ayer of **fabric** . 1 8. The nonwoven **fabric** protective cover article of Claim 17 wherein at least one of the weights is joined to the protective cover article between the layers of **fabric** . 1 9. The nonwoven **fabric** protective cover article of Claim 18 wherein at least one weight is encased in **fabric** cover prior to joining to the protective cover article.

20 The nonwoven **fabric** protective cover article of Claim 18 wherein al(inverted exclamation mark) weights are encased in **fabric** cover prior to joining to the protective cover article.

21 The nonwoven **fabric** protective cover article of Claim 18 wherein at least one weight is permanently joined to the protective cover article.

22 The nonwoven **fabric** protective cover article of Claim 18 wherein al(inverted exclamation mark) weights are permanently joined to the protective cover articie.

23 The nonwoven **fabric** protective cover article of Claim 17 wherein at least one of the layers of protective cover article is nonwoven **material** .

24 The nonwoven **fabric** protective cover article of Claim 23 wherein the layers of the protective cover article are not of the same **material** .

32

. The nomoven **fabric** protective cover article of Claim 17 wherein the layers of the protective cover article are joined together adjacent the edge of the protective cover article.

26 The nomoven **fabric** protective cover article of Ciaim 17 wherein the layers of the protective cover articies are...

...least one region not adjacent the edge of the protective cover article.

27 The nomoven **fabric** protective cover article of Claim 26 wherein the regions where the layers of the protective...

...edge of the protective cover article are at ieast 2 inches apart.

28 The nomoven **fabric** protective cover article of Claim 27 wherein the layers of the protective cover article are joined together by stitching.

29 A multi-layer nomoven **fabric** protective cover article comprising:
a. a top surface;
b. a bottom surface;
c. at least one edge; and,
d. a plurality of weights joined thereto,
wherein the nomoven **fabric** is hydrophobic and has a basis weight from between about 0. 1 5 osy to...

...about 4 to about 5 for blueberry, instant coffee, gravy, and wine.

30 The nomoven **fabric** protective cover article of Claim 29 Merein at least one weight is joined adjacent the edge of the protective cover article.
33
. The nonwoven **fabric** protective cover article of Claim 29 wherein ... protective cover article not adjacent the edge of the protective cover articie.
32 The nonwoven **fabric** protective cover article of Claim 29 wherein at least one weight is joined to the top surface of the protective cover article.

33 The nonwoven **fabric** protective cover article of Claim 29 wherein at least one weight is joined to the bottom surface of the protective cover article.

34 The nonwoven **fabric** protective cover article of Claim 29 wherein at least one weight is encased in **fabric** cover prior to joining to the protective cover article.

35 The nonwoven **fabric** protective cover article of Claim 29 wherein at least one
weight is permanently joined to the protective cover articie,

36 The nonwoven **fabric** protective cover article of Claim 29 wherein the nonwoven **fabric** has a stain resistance from about 4 to about 5 for tea, clay, ketchup, beef blood, mustard, chocolate syrup, and grape juice.

37 The nonwoven **fabric** protective cover article of Claim 29 wherein the nonwoven **fabric** has a colorfastness to light from about 4.5 to about 5.
38 The nonwoven **fabric** protective cover article of Clairn 29 wherein the
nonwoven **fabric** has a pilling resistance before laundering from about 3 to about 5 and a pilling resistance after laundering from about 3 to about 5.

39 The nonwoven **fabric** protective cover article of Claim 29 wherein the nonwoven **fabric** has dimensional change after one laundering of about 3.0 percent
34
or less and...

...dimensional change after five launderings of about 4.5 percent or less.

40 The nonwoven **fabric** protective cover article of Claim 29 wherein the nonwoven **fabric** has an **abrasion** resistance flex in the **warp** direction from about 1 00 cycles to about 300 cycles and an **abrasion** resistance flex in the filling direction from about 40 cycfes to 140 cycles.

41 The nonwoven **fabric** protective cover article of Claim 29 wherein the nonwoven **fabric** has a colorfastness to laundering from about 4.5 to about 5.

42 The nonwoven **fabric** protective cover article of Claim 29 wherein the nonwoven **fabric** has a hydrostatic water resistance from about 45.0 millibars to about 55.0 millibars.

43 The nonwoven **fabric** protective cover article of Claim 29 wherein at least one of the weights is joined to the protective cover article between the layers of **fabric** .

44 The nonwoven **fabric** protective cover article of Claim 29 wherein at least one of the layers of protective cover article is nonwoven **material** .

45 The nonwoven **fabric** protective cover article of Claim 29 wherein the layers of the protective cover article are not of the same **material** .

46 The nonwoven **fabric** protective cover article of Claim 29 wherein the layers of the protective cover article are joined together adjacent the edge of the protective cover articie.

47 The nonwoven **fabric** protective cover article of Claim 29 wherein the layers of the protective cover articles are...

...least one region not adjacent the edge of the protective cover article.

48 The nomoven **fabric** protective cover article of Claim 47 wherein the regions where the layers of the protective...

...edge of the protective cover article are at least 2 inches apart.

49 The nomoven **fabric** protective cover article of Claim 48 wherein the layers of the protective cover article are...

34/3,K/96 (Item 96 from file: 349)
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THERMAL WRAP **WITH ELASTIC PROPERTIES**
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THERMAL WRAP **WITH ELASTIC PROPERTIES**
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Detailed Description
Claims
English Abstract
There is provided an elastic thermal insulating **wrap** having a insulating skin facing layer and an airflow impeding layer, with elastic strands interposed...

...in a substantially parallel manner and the strands and layers are bonded to produce the **wrap** laminate.

Detailed Description
THERMAL **WRAP** WITH ELASTIC PROPERTIES
BACKGROUND OF THE INVENTION
Thin, low cost, and stretchable thermal body **wraps** are very useful for thermal therapy products. These **wraps** should be easily stretched and wrapped around a body part and keep the desired temperature...

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17 DEC 2002 FILE DATE

...benefits of low-level thermal therapy and compression therapy for pain relief, circulation enhancement and **injury** prevention to meet consumers' needs.

While the existing **wraps** have performed adequately, they are not as comfortable to wear as may be desired. In...
...of the materials needed to make them. There remains a need for an elastic thermal **wrap** that is more comfortable for a wearer and which has excellent thermal insulating properties.

SUMMARY...

...response to the discussed difficulties and problems encountered in the prior art, a new thermal **wrap** with elastic properties has been developed. The **wrap** is made of a relatively thicker insulating layer having a high capacity for holding air, bonded to a relatively thinner layer made from meltblown **fabric** , film or such other **material** as may serve to impede airflow through the laminate. Elasticity is provided by a layer...

...The structure is desirably held together by the use of an adhesive or tacky meltblown **fibers** . The **wrap** is desirably inexpensive to produce and disposable.

BRIEF DESCRIPTION OF THE DRAWINGS
3 0
Figure 1 A is a drawing of the **material** of the invention and Figure I B is a schematic
drawing of a process of making,the **material** of the invention
Figure 2 is a drawing of the apparatus for thermal testing according...

...Thermal Insulation Performance Test.

Figure 5 is a graphical representation of results of testing the **material** of Example 1 according to the Thermal Therapy Temperature Profile Test.

Figure 6 is a graphical representation of results of testing the **material** of Example 2 according to the Thermal Therapy Temperature Profile Test.

Figure 7 is a graphical representation of results of testing the **material** of Comparative Example 1 according to the Thermal Therapy Temperature Profile Test.

Figure 8 is a graphical representation of results of testing the **material** of Comparative Example 2 according to the Thermal Therapy Temperature Profile Test.

Figure 9 is a graphical representation of results of testing a self adhesive **bandage** from the Johnson & Johnson company according to the Thermal Therapy Temperature Profile Test.

Figure 1...

...a 4.4 ounce per square yard (149 grams per square meter or gsm) cotton **knit** according to the Thermal Therapy Temperature Profile Test.

Figure 1 1 is a graphical representation of results of testing the

non-stretchable portions of a THERMA-CAREO **wrap** from the Procter & Gamble Company according to the Thermal 2 0 Therapy Temperature Profile Test.

DETAILED DESCRIPTION OF THE INVENTION
The present invention is a thermal **wrap** having elastic properties such that it is useful in thermal therapy on limbs and other...

...It may also be used in veterinary applications and in general insulating applications where a **wrap** that will conform to a shape is needed.

The **wrap** has an insulating layer that presents a padded surface toward the skin of the wearer...
...from the skin and elastic 3 0 strands therebetween.

As alluded to above, the elastic **wrap** of this invention can conform to a wide variety of shapes. It may be used...

...Veterinary uses include the wrapping of limbs of animals for support in the case of **injury** .

3 5 The insulating layer is one that is soft to the touch and reduces...

...3,849,241, 5,382,400, 4,340,563 and 3,692,618. One suitable **material** is bonded carded web which may be made from polyolefin **fibers** or of rayon or polyethylene terephathalate (PET) **fibers** or mixtures thereof. Yet another **material** for the insulating layer is a conjugate or bicomponent **fiber** layer, desirably including rayon, PET and/or polyolefins. One desirable type of 0 bicomponent **fiber** is a polypropylene/polyethylene, sheath/core **fiber** . See, for example, US Patents 4,795,668, 5,540,992 and 5,336,552. Bicomponent **fibers** are commercially available from KoSA Inc. (formerly Trevira Inc. and formerly Hoechst-Celanese), of Salisbury, NC 28145-0004 under the designation T-255 and T-256, though many suitable bicomponent **fibers** are known to those skilled in the art, and are made by many 5 manufacturers such as the Chisso Corporation of Japan and **Fibervisions** LLC of Wilmington, DE.

In one embodiment, the insulating layer may be made from meltblown **fibers** that may be made according to methods known in the art from various olefins and olefin copolymers like polyethylene, polypropylene, polybutylene etc. Meltblown **fibers** may also be 2,0 made from elastic polymers.

In another embodiment the insulating layer may be a coform layer or meltblown **fibers** as discussed above, with pulp. The coform process is one in which at least one...

...it is forming. Such other materials may be pulp, superabsorbent particles, natural 5 and regenerated **fibers** (for example, cotton or rayon **fibers**) and/or synthetic polymers (for example, polypropylene or polyester) **fibers** , for example, where the **fibers** may be of staple length. Coform processes are shown in commonly assigned US Patents 4...

...Coosa, Alabama). Pulp may be modified in order to enhance the inherent characteristics of the **fibers** and their processability. Curl may be imparted to the **fibers** by methods including chemical treatment or mechanical twisting.
Curl is typically imparted before crosslinking or...

...the use of heat or caustic treatments such as mercerization. Examples of

these types of **fibers** include NHB416 which is a chemically crosslinked southern softwood pulp **fibers** which enhances wet modulus, available from the Weyerhaeuser Corporation of Tacoma, WA. Other useful pulps...

...and twist, in addition to imparting added dry and wet stiffness and resilience to the **fiber** . Another suitable pulp is Buckeye HP2 pulp and still another is IP Supersoft from International Paper Corporation. Suitable rayon **fibers** are 1.5 denier Merge 18453 **fibers** from Acordis Cellulose **Fibers** Incorporated of Axis, Alabama.

Another suitable insulating layer **material** is a "tuft-textured" coform **material** made of meltblown **fibers** and pulp according to US Patent 4,741,941. This **material** is formed onto a forming wire with an elevated below wire vacuum, thus forming resilient tufts in the **material** . The resulting **material** has a high bulk value and a soft surface texture. Tufttextured coform has overlapping thermoplastic **fibers** or filaments defining an array of hollow or filled projections extending out of the **material** and separated by planar land area in a plane taken along a line parallel to the **material** , ignoring the projections. The **material** 0 is characterized by at least a 5 degree or higher average degree of **fiber** or filament alignment in the projections than in the land area. Other suitable three-dimensional...

...for the practice of this invention desirably have from 20 to 80 weight percent meltblown **fiber** , with the balance pulp. The weight ratio of the meltblown 5 and pulp may, for...

...which includes the 0 steps of combining fibrous materials with a gas. The gas and **fiber** mixture is directed onto a moving conveyer to form a non- **woven** web. The web is contacted with a **fabric** having a three-dimensional surface under sufficient force to cause the web to conform to...

...areas and valley areas that 5 correspond to the three-dimensional pattern present on the **fabric** . After the textured surface is formed, the airlaid web is bonded together by thermal bonding...

...1, the insulating 0 layers from Examples 1 - 6 below and a 62 gsm airlaid **material** made with 83 weight percent CF405 pulp and 17 weight percent latex binder.
Table 1...

...Alternatively, an inelastic but stretchable layer may be used. The airflow impeding layer of the **wrap** may 0 be a meltblown, film or other similar **material** . The airflow impeding layer may also be a laminate of, for example, meltblown layers and...

...where the spunbond layer is on the outermost side of the laminate will provide greater **abrasion** protection to the **wrap** and protect the meltblown layer. The spunbond layer could be made from bicomponent **fibers** or 5 monocomponent **fibers** .

Suitable polymers for the airflow impeding layer include polyolefins, polyamides,
5
polyesters, polyetheresters and the...

...airflow impeding layer should be sufficiently low as to help maintain the heat within the **wrap** . Airflow for this layer, as measured by Frazier permeability testing, is generally above 15250 liters per **square**

meter per **minute** or LIVIM 1 0 (50 **cubic** **feet** per **minute** per **square** **foot** of **material** or CFM) or 22860 LIVIM (75 CFM) and should be below 381 00 LMM (1...

The sample 1 **material** to be tested is placed in the apparatus of Figure 2. The test sample 1...

...plate surface (35 OC)
Ta = temperature of the ambient air (22.0 OC)
2 0 **Frazier Permeability** : A measure of the **permeability** of a **fabric** or web to air is the **Frazier Permeability** which is performed according to Federal Test Standard 191A, Method 5450 dated July 20, 1978, and is reported as an average of 3 sample readings. **Frazier** Permeability measures the air flow rate through a web in **cubic feet** of air per **square foot** of web per **minute** or CFM. Convert CFM to liters per **square meter** per **minute** (LMM) by
2 5 multiplying CFM by 304
Thickness: The thickness of samples was measured...

...of comparative examples were also tested and are described below.

3 5 Example 1.

This **material** has a 70 gsm highly textured coform layer made from a 40/60 weight percent...

...cm of width, and a layer of 25.4 gsm (0.75 osy) meltblown polypropylene **fibers** . By "highly textured" is meant that the layer has tufts of about 0.64 cm...

...first layer before addition of elastic strands) of 55 percent.

Example 2.

1 0 This **material** is has a 50 gsm through-air bonded carded web layer made from a 40/60 weight percent blend of polypropylene/polyethylene, sheath/core bicomponent spunbond **fiber** and Rayon **fiber** , a layer of LYCRAO 470 thread at 4 threads per cm of width and a layer of 25.4 gsm meltblown polypropylene **fibers** . The layers were laminated together and collected in the same manner as in Example 1.

Example 3.

This **material** is has a 70 gsm medium textured coform layer made from a 40/60 weight...

...4 threads per cm of width and a layer of 25.4 gsm meltblown polypropylene **fibers** . By "medium textured" is meant that the layer has tufts of about 0.32 2...

...laminated together and collected in the same manner as in Example 1.

Example 4.

This **material** is has a 70 gsm flat coform layer made from a 35/65 weight percent...

...5 threads per cm of width and a layer of 25.4 gsm meltblown polypropylene **fibers** . The layers were laminated together and collected in the same manner as in Example 1.

Example 5.

This **material** is has a 40 gsm medium textured coform layer made from a

40/60 weight...

...4 threads per cm of width and'a layer of 25.4 gsm meltblown polypropylene **fibers** . The layers were laminated together and collected in the same manner as in Example 1.

Example 6.

This **material** is has a 50 gsm through-air bonded carded web layer made from a 40/60 3 5 weight percent blend of polypropylene/polyethylene, sheath/core bicomponent spunbond **fiber** and 2 -3 denier per foot (dpf) PET **fiber** , a layer of LYCRAO 470 thread at 4 threads per
1 1
cm of width and a layer of 25.4 gsm meltblown polypropylene **fibers** . The layers were laminated together and collect ed in the same manner as in Example 1.
Comparative Example 1.

This **material** has a 40 gsm Type C THINSULATEO layer, a layer of LYCRA@) 470 thread at 4 threads per cm of width and a layer of 25.4 gsm meltblown polypropylene **fibers** . The layers were laminated together and collected in the same manner as in Example 1.

Comparative Example 2.

This **material** has a 40 gsm Type I THINSULATE0 layer, a layer of LYCRAO 470 thread at 4 threads per cm of width and a layer of 25.4 gsm meltblown polypropylene **fibers** . The layers 1 0 were laminated together and collected in the same manner as in Example 1.

Comparative Example 3.

This **material** is available from the Johnson & Johnson Consumer Companies, Inc. as COACH@ brand sports tapes and **wraps** . It is a self adhesive **bandage** .

Comparative Example 4.
1 5 This **material** is a 4.4 osy (149 gsm) **knit** cotton **fabric** .

Comparative Example 5.

This **material** is a commercially available nonwoven **fabric** sold under the trade name THERMA-CARE by the Procter and Gamble Company.

2 0...

...properties of the test sample.

Two variables are important in judging the efficacy of thermal **wraps** ; the differential temperature (T2-T1) and the time period that the differential is greater than zero. If the differential temperature is great, the insulating layer is retaining heat in the **wrap** , thus 3 0 providing more heat to the body. If the differential temperature is low, heat is escaping from the **wrap** at about the same rate at which it is being generated, thus providing less heat...

Claim
1) An elastic thermal insulating **wrap** comprising an insulating layer having a thickness between about 1 and 2 mm and a...

...less than 0.5 mm, and elastic strands interposed therebetween, bonded together to produce said **wrap** . 2) The **wrap** of claim 1 wherein said insulating layer is made from a **material** selected from the group consisting of tuft-textured coform, non-textured coform, bondedcarded webs, tuft-textured airlaid, non-textured airlaid and bicomponent **fiber** layers. 3) The **wrap** of claim 1 wherein said insulating layer is made from a mixture of **fibers** of polyolefin and pulp. 4) The **wrap** of claim 2 wherein said insulating layer further comprises an active agent selected from the group consisting of odor, skin health and perspiration absorption. 5) The **wrap** of claim 3 wherein said polyolefin **fibers** are selected from the group of consisting of **fiber** of polyethylene, polypropylene, polybutylene and copolymers, blends, and conjugates thereof. 6) The **wrap** of claim 3 wherein said polyolefin and pulp are in a weight ratio of between 30/70 and 70/30. 7) The **wrap** of claim 3 wherein said polyolefin and pulp are in a weight ratio of between 40/60 and 60/40. 8) The **wrap** of claim 2 wherein said airflow impeding layer, is selected from the group consisting of meltblown **fabrics** , films, spunbond **fabrics** and laminates thereof. 9) The **wrap** of claim 8 wherein said airflow impeding layer includes at least one spunbond layer made from bicomponent **fibers** . 10) The **wrap** of claim 8 wherein said airflow impeding layer comprises a spunbond layer on an outermost side to provide **abrasion** resistance.

- 1 5

I 1) The wrap of claim I wherein said airflow impeding layer has a Frazier **permeability** between 50 and 125 **cubic feet** per **minute** per **square foot** . 12) The **wrap** of claim 1 wherein said airflow impeding layer has a **Frazier** permeability between 75 and 1 00 **cubic feet** per **minute** per **square foot** . 13) The **wrap** of claim 1 wherein said elastic strands are arranged in a substantially parallel manner. 14) The **wrap** of claim 13 wherein said elastic strands are made from LYCRAO polymer. 15) The **wrap** of claim 14 having between 2 and 64 elastic strands per cm of width. 16) The **wrap** of claim 15 having about 4 strands per cm of width. 17) The **wrap** of claim 1 wherein said layers are bonded by a **material** selected from the group consisting of a hot melt adhesive and tacky meltblown **fibers** . 18) An elastic insulating **wrap** comprising an insulating layer having a thickness between about 1 and 2 mm and a basis weight basis weight between 40 and 1 00 gsm, made from a coform **material** having a weight ratio of polyolefin meltblown **fibers** and pulp of between about 40/60 and 60/40 and a insulating value of...

...an amount of between 2 to 64 strands per cm of width therebetween. 19) The **wrap** of claim 18 further comprising an adhesive between said layers in an amount between 2 and 1 0 gsm. 20) The **wrap** of claim 18 wherein said airflow impeding layer has a **Frazier** permeability between 75 and 1 00 **cubic feet** per **minute** per **square foot** .

21) An elastic thermal **wrap** comprising:

a insulating layer having a thickness between about 1 and 2 mm and a basis

weight basis weight between 40 and I 00 gsm, made from a coform **material**

having a weight ratio of polypropylene meltblown **fibers** and debonded pulp of

16

between about 30/70 and 70/30, wherein said insulating...

...to said elastic strands and insulating layer and having a thickness of about 0.3 **mm** and a Frazier **permeability** of less than 1 00 **cubic feet** per **minute** per **square foot** . 22) The **wrap** of claim 21 having

an original length which is stretchable and elongatable by at least...
...length upon release of said elongation force. 23) A method of making an elastic thermal **wrap** comprising the steps of providing an insulating layer, joining to said insulating layer elastic strands...

34/3,K/73 **(Item 73 from file: 348)**
DIALOG(R)File 348:EUROPEAN PATENTS

00311901
Orthopedic casting materials and methods.
Material **und Verfahren fur orthopadische Stutzverbande.**
Matiere et procede pour platrage orthopedique.
PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 290207 A2 881109 (Basic)
EP 290207 A3 881207
EP 290207 B1 930210
APPLICATION (CC, No, Date): EP 88303901 880429;
PRIORITY (CC, No, Date): US 47006 870505; US 53098 870522
DESIGNATED STATES: AT; BE; CH; DE; FR; GB; IT; LI; NL; SE
INTERNATIONAL PATENT CLASS: **A61F-013/04** ; **A61L-015/07**
ABSTRACT WORD COUNT: 107

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CLAIMS B	(English)	EPBBF1	833
CLAIMS B	(German)	EPBBF1	718
CLAIMS B	(French)	EPBBF1	973
SPEC B	(English)	EPBBF1	20504
Total word count - document A			0
Total word count - document B			23028
Total word count - documents A + B			23028

=(US)4841958

Material **und Verfahren fur orthopadische Stutzverbande.**
INTERNATIONAL PATENT CLASS: **A61F-013/04** ...

... **A61L-015/07**

...SPECIFICATION The preferred surfactants and polymers comprised of hydrophilic groups are discussed in Sections 1-3 **below** .
1. Ionic Alkyl, Aryl or Arylalkyl Surfactants

This aspect of the invention relates to the use of particular lubricants added to polymers used on orthopedic casting tapes which render them non-tacky. In these embodiments, the lubricant consists of ionic alkyl, ionic aryl, or ionic arylalkyl compounds. The alkyl compounds generally contain more than about eight contiguous methylene units per molecule which give the compound fatty characteristics. The ionic alkyl compounds can be anionic, cationic or zwitterionic in nature, for example, sodium hexadecyl sulfate and...

...are the naphthalene sulfonates and alkylbenzene sulfonates, respectively. In practice, the ionic compounds may be added to the isocyanate-functional prepolymer during formulation generally at a level of from 1.0% to 5.0% by weight of the total. The curable resin is coated on a sheet in the standard fashion to give rolls of tape. Alternatively, and preferably, the ionic compound can be deposited on the surface of a curable resin coated sheet.

When immersed in water, the tapes quickly become very slippery. The rolls unwind easily and do not stick to gloves. After the roll is wrapped around the limb, molding of the cast becomes easy due to the non- tacky nature of the resin. The cast can be rubbed over its entire length without sticking...

...of tape do not separate from each other. This pre-lubricating resin approaches the handling characteristics of plaster of Paris bandages very closely.

In summary, the addition of ionic compound surfactants to an isocyanate-functional prepolymer used in orthopedic casting tapes results in a tape which becomes non-tacky after immersion in water. This is advantageous in that the resulting coating material mimics the properties of a plaster bandage in its ease of application and handling. The rolls unwind easily and molding of the cast is facilitated. Despite its slipperiness, the layers of tape laminate well to each other.

2. Polyoxyethylated Surfactants

This aspect of the invention relates to the use of polyoxyethylated surfactants which, when applied to the surface of curable liquid resin coated casting materials or incorporated into the resin, produce a casting product which is slippery and easy to mold to a patient's limb. These materials are of relatively high molecular weight and are generally waxy at room temperature. In addition, the skin permeability and general toxicity of these materials is very low, making them well suited for addition to an orthopedic bandage . These compounds may be combined with the silicones described above in order to yield a casting material which is non-tacky when dry and very slippery when wet. In addition, these compounds are active as lubricants even when hard water is used to cure the prepolymer .

The following chemical classes of materials when applied to the surface of a casting tape as previously described have been found to yield the desired non-tacky or slippery casting materials.

The above-listed ingredients were **combined** and applied to the strips of nonwoven polyester **fabric** in accordance with the procedure of Example 1. Each **strip** was then sprayed on both surfaces with Tergitol(TM) NP-40 in accordance with the...

...removed from their respective pouches and tested in accordance with the KCOF method set forth **herein** ; these strips were found to have a mean kinetic coefficient of **friction** of about 0.29.

The 48 inch (121.9 cm) length of material was cured and tested for air **permeability** according to the air permeability test **set** forth herein. When tested, four cured flat **laminates** formed from this **material** (each laminate having six layers, each layer measuring 2 inches (5.1 cm) by 2 inches (5.1 cm)) were found to have an average air **permeability** of about 200 cm(**sup** **3**) air/ **second** when an air pressure differential of about 6.4 **psi** (**absolute**) or 449 g/ **cm** (sup 2) was imposed between the two sides of each laminate.

Example 14

In this example, a strip (about 3 inches (7.6 cm) wide and about 15 inches (**38** .1 cm) long) of the nonwoven Kevlar(sup(R) **fabric** of Example 5 was impregnated **with** the resin of Example 13 using the procedure of Example 13 However, in this **Example** 14 the resultant resin impregnated strip was coated with Cyanomer(TM) A370 in accordance with the procedure of Example 30. The resultant **material** was then tested in accordance with the KCOF method set forth herein; this **material** was found to have a kinetic coefficient of friction of about 0.27.

Example 15 41 inches (104.1 cm) long) of resin impregnated **material** were prepared in accordance with Example 1. Ten strips, each having a length of about...

...8 cm), were cut from one of the 144 inch (365.8 cm) lengths of **material** ; each of these ten strips was sprayed with polydimethylsiloxane in accordance with the procedure of...

...that the water dipping procedure (KCOF procedure steps 1 and 2) was omitted. In other **words** , these other five strips were tested in a "dry" state; the **mean** kinetic coefficient of friction of these five strips tested in the dry state was determined to be about 0.74.

The 48 inch (121.9 cm) **length** of **material** of this example was cured and tested for air **permeability** in accordance with the air **permeability** test set forth herein. When tested, four cured **flat** laminates formed from this **material** (each laminate having six layers, each layer measuring 2 inches (5.1 cm) by 2...

...to have an average air permeability of about 115 cm(sup 3) air/second when **an** air pressure differential of about **6** .4 psi (absolute) or 449 g/cm(**sup** **2**) was imposed between the two sides of each laminate.

The 41 inch (104.1 cm) length of **material** of this example was tested for ring strength in accordance with the procedure set forth in Example 2. The average ring strength of the rings tested was determined to **be** about 30 pounds/ **inch** (5.36 kg/cm).

34/3,K/64 (Item 64 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00344796
Protective garment.
Schutzbekleidung.
Vetement de protection.
PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 345820 A1 891213 (Basic)
EP 345820 B1 930623
APPLICATION (CC, No, Date): EP 89110644 890612;
PRIORITY (CC, No, Date): US 205709 880610
DESIGNATED STATES: BE; DE; ES; FR; GB; IT; LU; NL; SE
INTERNATIONAL PATENT CLASS: A41D-013/00; A41D-031/02;
ABSTRACT WORD COUNT: 114

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	EPBBF1	322
CLAIMS B	(German)	EPBBF1	309
CLAIMS B	(French)	EPBBF1	357
SPEC B	(English)	EPBBF1	2325
Total word count - document A			0
Total word count - document B			3313
Total word count - documents A + B			3313

...ABSTRACT 102,106) of both the top (12) and bottom (14) is made from a breathable **material** . The result is a vey high degree of comfort and protection from contamination, as well as limited pilling and release of **fibers** from the garment (10). ...

...SPECIFICATION 6 May 1986 relate to disposable surgeon's gowns having back closures and made of **material** that **is** liquid repellent or impermeable in the front and **porous** or **breathable** in back. U.S. Patent 4,196,245 to Kitson, Gilbert and Israel dated 1 April 1980 is directed to a nonwoven **fabric** for **use** in disposable items such as surgical gowns that can be treated for increased liquid repellency and **abrasion** resistance. **U** .S. Patent 4,665,563 to Harvey dated 19 May 1987 is directed to a...

...GB-A-2 011 244 discloses a protective garment made of light weight heat resistance **material** where the most exposed parts are covered with a layer of rubber-like **material** .
The present invention intends to provide a protective garment with a very high degree of comfort and protection from contamination as well as reduced pilling and release of **fibers** from the garment. This object is solved by the garment characterized by independent claim 1...

...of both the top and the bottom are made from a nonwoven having a smooth

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PROTECTIVE GARMENT IN SPRAY-PAINTING

calendered outer surface and an uncalendered inner body facing surface and the **back portions** of **the** top **and bottom are** made from a breathable **material** having a **Frazier** air vapor **permeability** (ASTM designation: D737-75) of at least about 76. **25** cm(**sup 3**) per **minute** per cm(**sup 2**) (150 **cubic feet** per **minute** per **ft** (**sup 2**)). The front opening includes a "Z" closure without an exposed raw edge. Specific embodiments include those wherein the nonwoven **material** used for the front portions is a smooth calendered laminate of a spunbonded polypropylene nonwoven...

...2 is a side view of the garment of FIGURE 1.

FIGURE 3 is a **back** view of the garment of FIGURE 1.

FIGURE 4 is a cross-section of the "Z" **closure** of the top taken along lines for 4-4 of FIGURE 1.

FIGURE 5 is a cross-section of a **fabric** useful for forming the front of the garment of the **present** invention.

FIGURE 6 illustrates the **fabric** of FIGURE 5 after calendering one surface only.

FIGURE 7 illustrates a preferred pocket cover...

...of the garment of the present invention.

FIGURE 8 is a cross-section of a **fabric** useful for forming the back of the garment of the present invention.

FIGURE 9 illustrates...the line of front closure 26. While snaps are shown, other fastening devices can be **used** that are consistent with the "Z" fold. Snaps, however, are preferred because they may be...

...particularly important where solvents are present, for example.

Turning to FIGURE 5, a preferred base **material** for use as the front portions of the garment of the present invention is illustrated...

...is incorporated herein by reference.

Turning to FIGURE 6, a further preferred embodiment is shown **illustrating** the web of FIGURE 5 that has received additional calendering on one side only. By "calendered" it **is** intended to include these surfaces that have an **abrasion** resistance of at least about 2500 cycles as measured using 24.65 mPa (1.7 psi) on a Martindale **Abrasion** Tester Model No. 103 **according** to British Standard No. 5690:1979. As shown, embossed web 84 has surface 86 that presents a smooth, impervious barrier whereas opposite surface 88 which is uncalendered includes **fiberals** 90 which are intended to contact the wearer and provide a comfortable feel. Such webs...

...174(degree)C (374(degree)F) and a pattern of from about 16,750 to **31**,620 bonds per **square meter** and **bonded** area in the range from about 25% to 30% of the surface area. FIGURES 8 and 9 similarly illustrate webs useful for the breathable back **material** . As shown, web 100 is a **porous** nonwoven bonded by a patterned application of heat and pressure in bond areas 102. Although...

...pants occurs by first sewing inseams, then sides and adding pocket tabs. Finally, the waist **and** cuff elastic is sewn in.

EXAMPLE

...The following components were assembled to construct the garment in accordance with FIGURE 1: Base **material** for the front was a layer of 20.3 gsm (0.6 ounces/ yd(sup...

...calendered at a temperature of 168(degree)C (335(degree)F) and pressure of 3. **45** bar (50 psi) only as described in above **referenced** U.S. Serial No. 07/130,366 to **Maddern** and Currie. **The material** for the

back was 40.7 gsm (1.2 ounces/yd(**sup** 2)) spunbonded polypropylene having a **Frazier** air vapor **permeability** of 150 gsm. The garment top and bottom were assembled as described above.

The garment...

...and a conventional coverall painting garment available under the Molnlycke trademark were subjected to simulated **use** conditions in a spray painting operation by placing garments over a corrugated box to represent a torso and to keep the **material** smoothly in place. A blotter was weighed and placed under the garment to absorb any...

...and then the garment with paint was allowed to "rest" for 10 minutes. After the **10** minutes, the inside was checked visually for any strike-through of paint both by checking the blotter and looking at the inside of the garment **fabric** .

While the paint did not reach the blotter, partial running of the paint and also...

...the opening of the zipper.

The two-piece garment's "Z" front closure in accordance **with** the invention not only prevents any **paint** from passing through, but was also easier to open when removing the garment. The front heavily calendered panel **material** and the lightly calendered back panel **material** prevented the paint from penetrating.

In addition, the two piece construction of the garment of...

...been found by wearers to be more comfortable than conventional coveralls particularly where a wide **range** of movement is needed. Further, the ability to change only a soiled top or bottom and to **combine** different sizes is highly convenient. Moreover, the **abrasion** resistant nature of the outer surface results in reduced incidences of contamination by pilling or release of **fibers** from the garment itself.

Thus, it is apparent that there has been provided, in accordance...

...apparent to those skilled in the art and by the foregoing description. Accordingly, it is **intended** to **embrace** all such **alternatives** , modifications, **and** variations **as** **are** included **in** **the** spirit **and** **broad** **scope** of the **appended** **claims** .

...CLAIMS 68) and said top and bottom back portions (102, 106) are made from a breathable **material** (100) having a **Frazier** air vapor **permeability** of at least about 150 **ft** (**sup** 3) per **minutes** per **ft** .(**sup** 2)

(Footnote: *)

and wherein said front opening (26) includes a 'z' closure without exposed raw edges...

34/3,K/33 (Item 33 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00740657
Triple layer papermaking fabric **providing improved** fiber **support**
Dreischichtige Papiermaschinegewebe mit verbesserter Faserunterstutzung
Tissu pour papeterie a trois couches ayant un support pour fibres **ameliore**

PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 698682 A1 960228 (Basic)
EP 698682 B1 990602
APPLICATION (CC, No, Date): EP 95850019 950120;
PRIORITY (CC, No, Date): US 294552 940823
DESIGNATED STATES: AT; BE; DE; ES; FR; GB; IT; NL; SE
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FULLTEXT AVAILABILITY:

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CLAIMS B	(English)	9922	827
CLAIMS B	(German)	9922	738
CLAIMS B	(French)	9922	1047
SPEC B	(English)	9922	4647
Total word count - document A			0
Total word count - document B			7259
Total word count - documents A + B			7259

=(US)5454405

Triple layer papermaking fabric **providing improved** fiber **support**
Tissu pour papeterie a trois couches ayant un support pour fibres **ameliore**

...ABSTRACT A1
A triple-layer papermaking **fabric** includes top and a bottom **weft** yarn layers interwoven with a system of **warp** yarns. The **warp** yarn system includes pairs of associated, stacked first and second **warp** yarns. The first **warp** yarn in each pair interweaves with the top **weft** yarns in a plain- **weave** pattern occasionally broken by an interweaving with a bottom **weft** yarn to join the top and bottom **weft** yarn layers together. The second **warp** yarn in each pair, ordinarily running between the top and bottom **weft** yarn layers and stacked below the first **warp** yarn, **weaves** over the top **weft** yarn skipped by the first **warp** yarn when it **weaves** down under a bottom **weft** yarn to maintain the plain- **weave** character of the top surface of the **fabric** . The second **warp** yarn never **weaves** with the bottom **weft** yarns. The **fabric** is flat- **woven** , and subsequently seamed into endless form. The first **warp** yarns have an exaggerated crimp to provide the **fabric** with an enhanced seam strength. The second **warp** yarns, having relatively little crimp, provide the **fabric** with an enhanced stretch resistance. (see image in original document) ...

...SPECIFICATION 1. Field of the Invention

The present invention relates to papermaking, and, more particularly, to **fabric** belts used in papermaking. Specifically, the present **fabric** belts are of the variety used to **mold** **fibers** into a three-dimensional structure, and, when so used, reduce non-uniform **fiber** distribution, pinholes and other irregularities frequently observed during such manufacturing processes.

The **fabric** 10 of the present invention must allow sufficient air flow perpendicular to the plane thereof...

...fabric 10 has an air permeability of from 60,6 m3)/min/m2) (200 standard **cubic feet** per minute per square **foot**) to 457 m3)/min/m2) (1,500 standard cubic **feet** per minute per square **foot**). The air **permeability** of the **fabric** 10 is measured under a tension of 2,7 kg per linear centimetre (15 pounds per linear inch) using a **Frazier Permeability** Tester at a differential pressure of 13 **mm** H2))O (0.5 inches H2))O). If any portion of the **fabric** 10 meets the aforementioned air permeability limitations, the entire **fabric** is considered to meet these limitations.

As implied above, yarns having non-round cross sections may be used to **weave** the **fabric** 10 of the present invention. In addition, the bottom **weft** yarn 14 may be of larger diameter than the top **weft** yarn 12. First **warp** yarn 16 and second **warp** yarn 18 may be of non-round cross section, but, in any event, would preferably have the same diameter. First **warp** yarn 16 and second **warp** yarn 18 do not necessarily have to have the same diameter as top **weft** yarn 12, although it may be preferred that they have the same diameter.

Where the **fabric** 10 is to be used as a through-air-drying belt, perhaps including a resinous...

...the yarns be of polyester having hydrolysis-resistant additives. On the other hand, where the **fabric** 10 is to be used in a purely forming application, polyamide yarns may be used in the **weaving** thereof, particularly as the bottom **weft** yarns 14 to obtain the benefit of polyamide's resistance to wear and **abrasion** . In general, **fabric** 10 may be **woven** from yarns extruded from any synthetic resin extrudable in monofilament form, the specific resin to be used being governed by the application or end use of the **fabric** 10.

In the preceding discussion, and as illustrated in Figures 1 through 4, it has been assumed the top **weft** yarns 12, bottom **weft** yarns 14, first **warp** yarns 16 and second **warp** yarns 18 are monofilament yarns. However, multifilament and plied monofilament yarns may be used as **weft** yarns, particularly as top **weft** yarns 12 where they could enhance the planarity of the paper side of the **fabric** 10.

While the **weave** pattern shown in Figures 1 through 4 is preferred in the production of **fabric** 10 because its plain- **weave** character provides the high level of surface planarity required to minimize the occurrence of pinholes...

...off between seam strength and stretch resistance, one skilled in the art might vary the **weave** pattern without departing from the scope of the appended claims by **weaving** a **fabric** having top and bottom **weft** yarns interwoven by a first **warp** yarn, which ties the **weft** yarns together, and including a second **warp** yarn associated therewith which does not bind with the bottom **weft** yarns, but **weaves** with the top **weft** yarns at such points where the first **warp** yarn associated in a preferably stacked pair therewith **weaves** with a bottom **weft** yarn.

Example,

A **fabric** 10 **woven** according to the pattern shown in Figures 1 to 4 is flat- **woven** with 354 **warp** strands per decimetre (90 **warp** strands per inch), of which 177 per decimetre (45 per inch) are first **warp** yarns 16 and 177 per decimetre (45 per inch) are second **warp** yarns 18 in stacked pairs therewith. There are 236 to 315 **warp** yarns 18 per decimetre (60 to 80 **weft** strands per inch) two thirds of which are top **weft** yarns 12 and one third of which are bottom **weft** yarns 14. **Weft** yarns 12,14 are in a 2:1 ratio, alternate top **weft** yarns 12 being

vertically stacked above bottom **weft** yarns 14.

The **fabric** 10 is subsequently seamed into endless form, the **warp** yarns thereby becoming longitudinal, or machine-direction, yarns, and the **weft** yarns becoming transverse, or cross-machine direction, yarns.

The first **warp** yarns 16 and second **warp** yarns 18 are polyester monofilaments of a round cross section having a 0.15 mm diameter. The top **weft** yarns 12 and bottom **weft** yarns 14 are polyester monofilaments of round cross sections having 0.15 mm and 0.20 mm diameters, respectively. Where **fabric** 10 has been **woven** with 283 **weft** strands per decimetre (72 **weft** strands per inch), it has an open area of 52.6%.

The air permeability of...

...per minute) at 13 mm H2))O (0.5 inches H2))O) measured by a **Frazier Permeability** Tester under a tension of 2,7 kg/cm2) (15 pounds per linear inch). The caliper, or thickness, of the **fabric** 10 is from 0,629 to 0,671 mm (0.

CLAIMS 1. A triple-layer papermaking **fabric** (10), comprising:

a system of top **weft** yarns (12) and a system of bottom **weft** yarns (14); and

a system of **warp** yarns (16, 18) having pairs of first and second **warp** yarns, said first **warp** yarns (16) interweaving with said top **weft** yarns (12) and occasionally binding said bottom **weft** yarns (14) to said top **weft** yarns in a repeating pattern, and said second **warp** yarns (18) interweaving with said top **weft** yarns (12) by running between said top **weft** yarns (12) and said bottom **weft** yarns (14) and by binding with said top **weft** yarns (12) at points where their paired first **warp** yarns (16) **weave** with said bottom **weft** yarns (14), said second **warp** yarns (18) not interweaving with said bottom **weft** yarns (14), wherein said top **weft** yarns (12), and said first and second **warp** yarns (16, 18) form a top surface of said triple-layer papermaking **fabric** (10), characterised in that said first **warp** yarn (16) in each of said pairs of first and second **warp** yarns (16, 18) is vertically stacked over its respective second **warp** yarn (18) except at points where said second **warp** yarn (18) binds with a top **weft** yarn (12).

2. A triple-layer papermaking **fabric** (10) as claimed in claim 1, wherein there are two yarns in said system of top **weft** yarns (12) for every one yarn in said system of bottom **weft** yarns (14), and wherein alternate yarns in said system of top **weft** yarns (12) are in a vertically stacked relationship with said yarns in said system of bottom **weft** yarns (14).

3. A triple-layer papermaking **fabric** (10) as claimed in claim 2, wherein said first **warp** yarns (16) interweave with said top **weft** yarns (12) in a plain- **weave** pattern, and wherein said second **warp** yarns (18) associated therewith interweave with said top **weft** yarns (12) in a plain- **weave** pattern at points where said first **warp** yarns (16) interweave with said bottom **weft** yarns (14).

4. A triple-layer papermaking **fabric** (10) as claimed in claim 2, wherein said first **warp** yarns (16) **weave** over and under six consecutive top **weft** yarns (12), then **weave** under the next bottom **weft** yarn (14) in a repeating pattern and then **weave** over the next top **weft** yarn (12) to repeat said pattern, and wherein said second **warp** yarns (18) **weave** under seven consecutive top **weft** yarns (12) and over the next top **weft** yarn (12) in a repeating pattern, said second **warp** yarns (18) **weaving** over top **weft** yarns (12) skipped by said first **warp** yarns (16) when said first **warp** yarns (16) **weave** with a bottom **weft** yarn (14).

5. A triple-layer papermaking **fabric** (10) as claimed in claim 4,

wherein said first **warp** yarns (16) **weave** under top **weft** yarns (12) vertically stacked over said bottom **weft** yarns (14), and over alternate top **weft** yarns (12) not stacked over bottom **weft** yarns (14), and wherein said second **warp** yarns (18) **weave** over alternate top **weft** yarns (12) not stacked over bottom **weft** yarns (14).

6. A triple-layer papermaking **fabric** (10) as claimed in claim 1, wherein said bottom **weft** yarns (14) have a greater diameter than said top **weft** yarns (12).
7. A triple-layer papermaking **fabric** (10) as claimed in claim 1, wherein said first and second **warp** yarns (16, 18) have the same diameter.
8. A triple-layer papermaking **fabric** (10) as claimed in claim 1, wherein said first and second **warp** yarns (16, 18) have a non-round cross section.
9. A triple-layer papermaking **fabric** (10) as claimed in claim 1, wherein said bottom **weft** yarns (14) have a non-round cross-section.
10. A triple-layer papermaking **fabric** (10) as claimed in claim 1, wherein said top **weft** yarns (12) have a non-round cross section.
11. A triple-layer papermaking **fabric** (10) as claimed in claim 1, wherein said first and second **warp** yarns (16, 18) and said top **weft** yarns (12) have the same diameter.
12. A triple-layer papermaking **fabric** (10) as claimed in claim 1, wherein said top **weft** yarns (12), said bottom **weft** yarns (14), said first **warp** yarns (16) and said second **warp** yarns (18) are monofilament yarns.
13. A triple-layer papermaking **fabric** (10) as claimed in claim 1 wherein said top **weft** yarns (12) are plied monofilament yarns.
14. A triple-layer papermaking **fabric** (10) as claimed in claim 1 wherein said bottom **weft** yarns (14) are plied monofilament yarns.
15. A triple-layer papermaking **fabric** (10) as claimed in claim 1 wherein said top **weft** yarns (12) are multifilament yarns.
16. A triple-layer papermaking **fabric** (10) as claimed in claim 1 wherein said bottom **weft** yarns (14) are multifilament yarns.
17. A triple-layer papermaking **fabric** (10) as claimed in claim 1 wherein said top **weft** yarns (12), said bottom **weft** yarns (14), said first **warp** yarns (16) and said second **warp** yarns (18) are hydrolysis-resistant polyester yarns.
18. A triple-layer papermaking **fabric** (10) as claimed in claim 1 wherein said top **weft** yarns (12), said bottom **weft** yarns (14), said first **warp** yarns (16) and said second **warp** yarns (18) are polyamide yarns.
19. A triple-layer papermaking **fabric** (10) as claimed in claim 1 wherein said bottom **weft** yarns (14) are polyamide yarns.

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Set      Items   Description
S1      224468   BANDAG? OR COMPRESS OR COMPRESSES OR NAPKIN? OR PAD OR PADS
              OR DRESSING? OR BANDAID? OR BAND()(AID OR AIDS)
S2      472863   SANITARY()WIPE? OR PATCH? OR POULTIC? OR POLTIC? OR WRAP? ?
              OR DIAPER? OR CUSHION?
S3     4712549   SCAB? OR WOUND? OR LACERAT? OR ABRASION? OR LESION? OR ULC-
              ER? OR BLISTER? OR CHANCR? OR TRAUMA? OR INJUR? OR SORE? ? OR
              DECUBIT?
S4    13112980   FABRIC? OR TEXTIL? OR MATERIAL? OR GAUZ? OR CLOTH OR CLOTHS
              OR MESH? OR TRICOT OR DOUBLE()NEEDL?()BAR OR FIBER? OR FIBRE?
S5      827504   KNIT? OR WOVEN? OR MOLD? OR MOULD? OR NETTING? OR WEFT? ? -
              OR WEAV? OR WARP? ?
S6      979236   POROS? OR POROUS? OR MICROPOROS? OR MICROPOROUS? OR POROSE?
              OR POROUSE? OR PORE?
S7      963407   PERFORAT? OR PERMEAB? OR FRAZIER? OR MVTR OR WVTR OR (MOIS-
              TUR? OR WATER?)()(VAPOR OR VAPOUR)()TRANSFER?()RATE?
S8     3789391   DENSIT? OR DENIER? OR DECITEX? OR TEX OR DTEX OR PENNYWEIG-
              HT? OR SCRUPUL?
S9     1716566   CU OR CUBIC? OR CUFT OR CUFEET OR CUFOOT OR SUP3 OR SUP()3
              OR "SUP.3" OR ".SUP.3" OR CUIN OR CUINCH?
S10     465195   FT OR FOOT OR FEET
S11    2517594   CM OR CENTIMET? OR METER? OR METR?
S12    2031833   MM OR MILLIMET? OR "IN." OR INCH? OR "FT." OR "MM." OR MMS
              OR "CC." OR CCS OR CMS OR "CM."
S13    7720064   MIN OR MINS OR "MIN." OR MINUTE? OR SEC OR SECS OR SECOND?
S14    1783015   SQ OR SQUARE? OR SQFT? OR SQFOOT? OR SQFOOT? OR SQFEET? OR
              SQIN? OR SQINCH? OR SUP2 OR SUP()2 OR "SUP.2" OR ".SUP.2"
S15          0   "FT./MIN./SQ.FT."
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S17      54349   S16 AND S6:S7
S18       3723   S17 AND S8
S19      54349   S17:S18
S20         31   S19 AND S9(5N)S10:S12(5N)S13:S14
S21         30   RD (unique items)
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21/3,K/16 (Item 1 from file: 240)
DIALOG(R)File 240:PAPERCHEM

00563530 PAPERCHEM NO: PB0104451
Absorbent Article Incorporating High- Porosity **Tissue with Superabsorbent Containment Capabilities**
Yarbrough, S. M.; Robinson, M. L.; Flaherty, M. P.
PATENT ASSIGNEES: Kimberly-Clark Corp. (Neenah: WI: United States)
PATENT NUMBER: US 5520673 PATENT DATE: 960528 PATENT CLASS#: 604/378
PATENT APP# - DATE OF APPLICATION
US 248268 - 940524
SOURCE: U.S. pat. 5,520,673. Issued May 28, 1996. 20 claims. 27 p. Cl.604/378. Filed: U.S. appln. 248,268} (May 24, 1994). [Engl.]

Absorbent Article Incorporating High- Porosity **Tissue with Superabsorbent Containment Capabilities**
An absorbent article such as a disposable **diaper** includes an absorbent structure sandwiched between a liquid- **permeable** top sheet and a liquid-impermeable back sheet. The absorbent structure includes particles of superabsorbent...

... one or more layers of material such as tissue paper. The face sheet has a **Frazier porosity** of at least 150 **cu ft / min / sq ft** of surface area and has not more than about 100 **pores** per 31.37 sq cm of surface area with a **pore** size greater than about 300 mm and at least 9500 **pores** per 31.37 sq cm of surface area with **pore** sizes of 67.97-92.39 mm.
DESCRIPTORS: ABSORBENTS; **DIAPERS** ; DISPOSABLES; ENGLISH; PATENTS; PRODUCT DESIGN; RETENTION; SORBENTS; SPECIALTY PAPERS; SUPERABSORBENTS; TISSUE PAPERS

21/3,K/19 (Item 4 from file: 240)
DIALOG(R)File 240:PAPERCHEM

00541835 PAPERCHEM NO: AB6620119
Surge-Management Nonwoven Web for Personal-Care Articles
Ellis, C. J.; Everett, R. D.
PATENT ASSIGNEES: Kimberly-Clark Corp. (Neenah: WI: United States)
PATENT NUMBER: GB 2287041 PATENT DATE: 950906 PATENT CLASS#: D04H1/54
PATENT APP# - DATE OF APPLICATION
GB 953268 - 950220
US 8206069 - 940304
SOURCE: Brit. pat. 2,287,041. September 6, 1995. 13 claims. 35 p. Cl.D04H1/54. Filed: Brit. appln. 3,268/95} (February 20, 1995). Priority: U.S. appln. 8,206,069 (March 4, 1994). [Engl.]

A personal-care absorbent article such as a disposable **diaper** or sanitary **napkin** includes a surge layer made of a nonwoven fabric comprising thermoplastic fibers heat-bonded to...

...to form a single-layer web having a basis wt. of at least 20 g/ **sq** m, a void vol. of 40-60 **cu** **cm** /g of web at 689 dynes/ **sq** **cm** pressure, a **permeability** of 5000-8000 darcy, a **porosity** of 97.2-98.8% and a surface area per void vol. of 24-49 **sq** **cm** / **cu** **cm** . The web may include at least 50 wt.% of bicomponent fibers, e.g., 40 wt...
DESCRIPTORS: ABSORBENT **PADS** ; BICOMPONENT FIBERS; BONDING; **DIAPERS** ; DISPOSABLES; ENGLISH; FABRIC; MAN MADE FIBERS; NONWOVENS; PATENTS; PLASTICS ; PRDS; SANITARY **NAPKINS** ; SYNTHETIC FIBERS; SYNTHETIC POLYMERS; THERMOBONDING; THERMOPLASTICS

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              OR DRESSING? OR BANDAID? OR BAND()(AID OR AIDS)
S2     448795   SANITARY()WIPE? OR PATCH? OR POULTIC? OR POLTIC? OR WRAP? ?
              OR DIAPER? OR CUSHION?
S3     829424   SCAB? OR WOUND? OR LACERAT? OR ABRASION? OR LESION? OR ULC-
             ER? OR BLISTER? OR CHANCR? OR TRAUMA? OR INJUR? OR SORE? ? OR
             DECUBIT?
S4    5431290   FABRIC? OR TEXTIL? OR MATERIAL? OR GAUZ? OR CLOTH OR CLOTHS
              OR MESH? OR TRICOT OR DOUBLE()NEEDL?()BAR OR FIBER? OR FIBRE?
S5     632795   KNIT? OR WOVEN? OR MOLD? OR MOULD? OR NETTING? OR WEFT? ? -
             OR WEAV? OR WARP? ?
S6      74816   POROS? OR POROUS? OR MICROPOROS? OR MICROPOROUS? OR POROSE?
              OR POROUSE? OR PORE?
S7      82905   PERFORAT? OR PERMEAB? OR FRAZIER? OR MVTR OR WVTR OR (MOIS-
             TUR? OR WATER?)()(VAPOR OR VAPOUR)()TRANSFER?()RATE?
S8     502910   DENSIT? OR DENIER? OR DECITEX? OR TEX OR DTEX OR PENNYWEIG-
             HT? OR SCRUPUL?
S9     265783   CU OR CUBIC? OR CUFT OR CUFEET OR CUFOOT OR SUP3 OR SUP()3
             OR "SUP.3" OR ".SUP.3" OR CUIN OR CUINCH?
S10   1673811   FT OR FOOT OR FEET
S11   1482721   CM OR CENTIMET? OR METER? OR METR?
S12    974845   MM OR MILLIMET? OR "IN." OR INCH? OR "FT." OR "MM." OR MMS
             OR "CC." OR CCS OR CMS OR "CM."
S13   6039850   MIN OR MINS OR "MIN." OR MINUTE? OR SEC OR SECS OR SECOND?
S14   1353348   SQ OR SQUARE? OR SQFT? OR SQFOOT? OR SQFOOT? OR SQFEET? OR
             SQIN? OR SQINCH? OR SUP2 OR SUP()2 OR "SUP.2" OR ".SUP.2"
S15         0   "FT./MIN./SQ.FT."
S16    948993   S1:S2 OR (S3 AND S4:S5)
S17     10219   S16 AND S1:S5(20N)S6:S7
S18      2393   S17 AND S8
S19     10219   S17:S18
S20       153   S19 AND S9(5N)S10:S12(5N)S13:S14
S21        56   S20 AND S6:S8(5N)S9:S14
S22        43   RD (unique items)
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